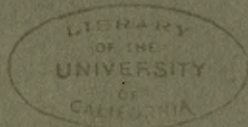


SEP 20 1912
EXCHANGE

DEFINITIONS
OF
REVISED CLASSES AND SUBCLASSES
OF SUBJECTS OF INVENTION
IN THE
UNITED STATES PATENT OFFICE

ARRANGED IN NUMERICAL ORDER

A SUPPLEMENT TO THE MANUAL OF CLASSIFICATION

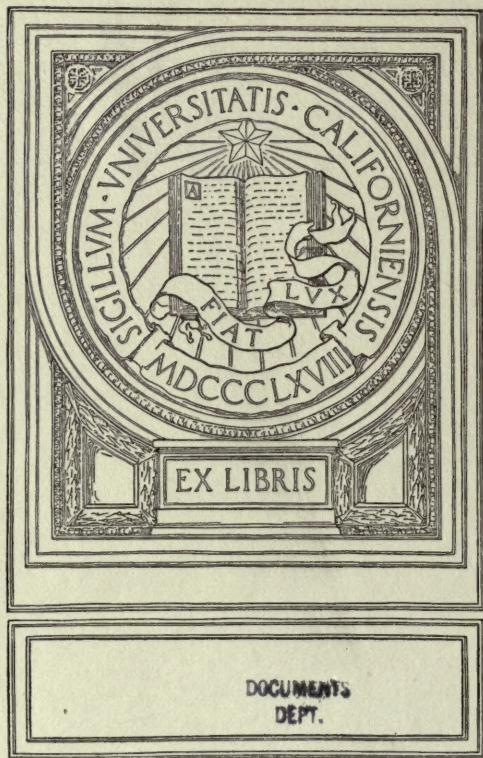


REVISED TO JANUARY 1, 1912

(INCLUDING CLASSIFICATION BULLETIN No. 27)



WASHINGTON
GOVERNMENT PRINTING OFFICE
1912



DOCUMENTS
DEPT.

DEFINITIONS
OF
REVISED CLASSES AND SUBCLASSES
OF SUBJECTS OF INVENTION
IN THE
UNITED STATES PATENT OFFICE

ARRANGED IN NUMERICAL ORDER

A SUPPLEMENT TO THE MANUAL OF CLASSIFICATION

REVISED TO JANUARY 1, 1912

(INCLUDING CLASSIFICATION BULLETIN No. 27)



WASHINGTON
GOVERNMENT PRINTING OFFICE
1912

DEFINITIONS

72-3

F35

1912-3

REVISED CLASSES AND SUBCLASSES

OF SUBJECTS OF INVENTION

DOCUMENTS
DEPT.

1912

UNITED STATES PATENT OFFICE

ARRANGED IN ALPHABETIC ORDER

A SUPPLEMENT TO THE MANUAL OF CLASSIFICATION

UNIT OF
CALIFORNIA

REVISED TO JANUARY 1, 1912

(INCLUDING CLASSIFICATION REVISIONS)



1105 coll.
7/1/12

WASHINGTON
GOVERNMENT PRINTING OFFICE

T1223
F352
1912
DOCUMENTS
DEPT.

REVISED CLASSES, ALPHABETICALLY ARRANGED.

Class No.	Class title.	Page.	Class No.	Class title.	Page.
181	Acoustics.....	407	153	Metal bending.....	363
244	Aeronautics.....	493	205	Metal drawing.....	437
124	Air guns, catapults, and targets.....	299	78	Metal forging and welding.....	147
102	Ammunition and explosive devices.....	195	22	Metal founding.....	41
119	Animal husbandry.....	235	189	Metallic building structures.....	423
86	Arms, projectiles, and explosive charges. Making.....	167	201	Metal ornamenting.....	435
190	Baggage.....	429	80	Metal rolling.....	153
6	Bee culture.....	9	76	Metal tools and implements. Making.....	139
9	Boats and buoys.....	13	29	Metal-working.....	67
10	Bolt, nail, nut, rivet, and screw making.....	15	60	Miscellaneous heat-engine plants.....	123
12	Boot and shoe making.....	23	185	Motors.....	413
36	Boots, shoes, and leggings.....	75	1	Nailing and stapling.....	5
77	Boring and drilling.....	143	163	Needle and pin making.....	381
107	Bread, pastry, and confection making.....	199	151	Nut and bolt locks.....	361
14	Bridges.....	27	88	Optics.....	169
24	Buckles, buttons, clasps, etc.....	51	89	Ordnance.....	171
218	Button, eyelet, and rivet setting.....	453	41	Ornamentation.....	83
79	Button making.....	151	224	Package and article carriers.....	459
40	Card, picture, and sign exhibiting.....	77	129	Paper files and binders.....	315
59	Chain, staple, and horseshoe making.....	117	92	Paper making and fiber liberation.....	181
194	Check-controlled apparatus.....	431	93	Paper manufactures.....	187
150	Cloth, leather, and rubber receptacles.....	357	229	Paper receptacles.....	461
91	Coating.....	175	95	Photography.....	191
133	Coin handling.....	317	25	Plastic block and earthenware apparatus.....	61
7	Compound tools.....	11	106	Plastic compositions.....	197
147	Coopering.....	355	207	Plastic metal working.....	443
164	Cutting and punching sheets and bars.....	383	18	Plastics.....	31
232	Deposit and collection receptacles.....	465	243	Pneumatic dispatch.....	491
85	Driven, headed, and screw-threaded fastenings.....	165	234	Recorders.....	467
219	Electric heating and rheostats.....	455	235	Registers.....	469
176	Electric lamps.....	391	108	Roofs.....	205
187	Elevators.....	417	113	Sheet-metal ware. Making.....	217
168	Farriery.....	389	114	Ships.....	223
42	Firearms.....	87	206	Special receptacles and packages.....	439
50	Fluid-pressure regulators.....	105	120	Stationery.....	243
110	Furnaces.....	207	186	Store service.....	415
48	Gas. Heating and illuminating.....	91	126	Stoves and furnaces.....	301
90	Gear cutting, milling, and planing.....	173	179	Telephony.....	399
49	Glass.....	99	135	Tents, canopies, umbrellas, and canes.....	323
54	Harness.....	109	161	Time-controlling mechanism.....	379
58	Horology.....	113	81	Tools.....	155
240	Illumination.....	475	82	Turning.....	163
67	Illuminating burners.....	127	157	Wheelwright machines.....	371
123	Internal-combustion engines.....	279	231	Whips and whip apparatus.....	463
63	Jewelry.....	125	242	Winding and reeling.....	481
216	Label pasting and paper hanging.....	445	245	Wire fabrics and structure.....	495
154	Laminated fabric and analogous manufactures.....	367	140	Wire working.....	325
69	Leather manufactures.....	133	20	Wooden buildings.....	37
158	Liquid and gaseous fuel burners.....	373	217	Wooden receptacles.....	449
134	Liquid coating compositions.....	319	143	Wood sawing.....	337
122	Liquid heaters and vaporizers.....	247	142	Wood turning.....	333
184	Lubrication.....	409	144	Woodworking.....	341
115	Marine propulsion.....	231	145	Woodworking tools.....	351
72	Masonry and concrete structures.....	135			

REVISED CLASSES, NUMERICALLY ARRANGED.

Class No.	Class title.	Page.	Class No.	Class title.	Page.
1	Nailing and stapling.....	5	122	Liquid heaters and vaporizers.....	247
6	Bee culture.....	9	123	Internal-combustion engines.....	279
7	Compound tools.....	11	124	Air-guns, catapults, and targets.....	299
9	Boats and buoys.....	13	126	Stoves and furnaces.....	301
10	Bolt, nail, nut, rivet, and screw making.....	15	129	Paper files and binders.....	315
12	Boot and shoe making.....	23	133	Coin handling.....	317
14	Bridges.....	27	134	Liquid coating compositions.....	319
18	Plastics.....	31	135	Tents, canopies, umbrellas, and canes.....	323
20	Wooden buildings.....	37	140	Wireworking.....	325
22	Metal founding.....	41	142	Wood turning.....	333
24	Buckles, buttons, clasps, etc.....	51	143	Wood sawing.....	337
25	Plastic block and earthenware apparatus.....	61	144	Woodworking.....	341
29	Metal working.....	67	145	Woodworking-tools.....	351
36	Boots, shoes, and leggings.....	75	147	Coopering.....	355
40	Card, picture, and sign exhibiting.....	77	150	Cloth, leather, and rubber receptacles.....	357
41	Ornamentation.....	83	151	Nut and bolt locks.....	361
42	Firearms.....	87	153	Metal bending.....	363
48	Gas. Heating and illuminating.....	91	154	Laminated fabric and analogous manufactures.....	367
49	Glass.....	99	157	Wheelwright machines.....	371
50	Fluid-pressure regulators.....	105	158	Liquid and gaseous fuel burners.....	373
54	Harness.....	109	161	Time-controlling mechanism.....	379
58	Horology.....	113	163	Needle and pin making.....	381
59	Chain, staple, and horseshoe making.....	117	164	Cutting and punching sheets and bars.....	383
60	Miscellaneous heat-engine plants.....	123	168	Farriery.....	389
63	Jewelry.....	125	176	Electric lamps.....	391
67	Illuminating burners.....	127	179	Telephony.....	399
69	Leather manufactures.....	133	181	Acoustics.....	407
72	Masonry and concrete structures.....	135	184	Lubrication.....	409
76	Metal tools and implements. Making.....	139	185	Motors.....	413
77	Boring and drilling.....	143	186	Store service.....	415
78	Metal forging and welding.....	147	187	Elevators.....	417
79	Button making.....	151	189	Metallic building structures.....	423
80	Metal rolling.....	153	190	Baggage.....	429
81	Tools.....	155	194	Check-controlled apparatus.....	431
82	Turning.....	163	201	Metal ornamenting.....	435
85	Driven, headed, and screw-threaded fastenings.....	165	205	Metal drawing.....	437
86	Arms, projectiles, and explosive charges. Making.....	167	206	Special receptacles and packages.....	439
88	Optics.....	169	207	Plastic metal working.....	443
89	Ordnance.....	171	216	Label pasting and paper hanging.....	445
90	Gear cutting, milling, and planing.....	173	217	Wooden receptacles.....	449
91	Coating.....	175	218	Button, eyelet, and rivet setting.....	453
92	Paper making and fiber liberation.....	181	219	Electric heating and rheostats.....	455
93	Paper manufactures.....	187	224	Package and article carriers.....	459
95	Photography.....	191	229	Paper receptacles.....	461
102	Ammunition and explosive devices.....	195	231	Whips and whip apparatus.....	463
106	Plastic compositions.....	197	232	Deposit and collection receptacles.....	465
107	Bread, pastry, and confection making.....	199	234	Recorders.....	467
108	Roofs.....	205	235	Registers.....	469
110	Furnaces.....	207	240	Illumination.....	475
113	Sheet metal ware. Making.....	217	242	Winding and reeling.....	481
114	Ships.....	223	243	Pneumatic dispatch.....	491
115	Marine propulsion.....	231	244	Aeronautics.....	493
119	Animal husbandry.....	235	245	Wire fabrics and structure.....	495
120	Stationary.....	243			

DEFINITIONS OF CLASSES AND SUBCLASSES.

Before using the following definitions the instructions contained in the "Manual of Classification" should be read.

The definition of any specific subclass should be read in connection with the definitions of all subclasses generic to it and with the definition of the class.

As the classification is undergoing revision, the classification changes published from time to time in the Official Gazette, and in the Classification Bulletin, published every six months, should be noted for modifications.

CLASS 1.—NAILING AND STAPLING.

DEFINITIONS.

Class.

This class is divided into "Implements" and "Machines," and the latter into the various types of blind slat and rod, book, box, shoe, heel, and miscellaneous nailing and stapling. Analogous lines for further subdivision under each heading have been followed. The subclasses are all more or less related and a complete search will frequently include all subclasses having analogous titles under the various headings.

Note.—For nail-making machines, search class 10, BOLT, NAIL, NUT, RIVET, AND SCREW MAKING.

For staple-forming machines, search class 59, CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 71, Staple making, and the subclasses thereunder.

For features of staple setting and riveting machines, search should also be made in the various subclasses in class 218, BUTTON, EYELET, AND RIVET SETTING.

For features of shoe nailing, lasting, trimming, etc., under class 12, BOOT AND SHOE MAKING.

Subclasses.

1. MACHINES, NAIL-DRIVING. Miscellaneous nail-driving machines for various purposes.

Search Class—

1—NAILING AND STAPLING, subclasses 10, Machines, Box, Nail-driving; 19, Machines, Shoe, Nail-driving; and 47, Implements, Nail-driving.

2. MACHINES, STAPLE FORMING AND SETTING. Miscellaneous machines which are adapted to form staples from short lengths cut from wire or from a prepared staple-strip and set them into various kinds of work.

Search Class—

1—NAILING AND STAPLING, subclasses 7, Machines, Book, Staple forming and setting; 11, Machines, Box, Staple forming and setting; 20, Machines, Shoe, Staple forming and setting; 48, Implements, Staple forming and setting; and 54, Machines, Blind slat and rod, Staple forming and setting.

3. MACHINES, STAPLE-SETTING, MAGAZINE. Miscellaneous machines in which loose staples are automatically fed to setting position from receptacles or magazines.

Search Class—

1—NAILING AND STAPLING, subclass 49, Implements, Staple-setting, Magazine.

4. MACHINES, STAPLE-SETTING. Miscellaneous machines which set staples placed in position by hand.

Search Class—

1—NAILING AND STAPLING, subclasses 8, Machines, Book, Staple-setting; 21, Machines, Shoe, Staple-setting; 50, Implements-Staple-setting; and 55, Machines, Blind slat and rod, Staple-setting.

5. MACHINES, NAIL-DRIVING, BOXES. The box or throat which suspends the nail beneath the plunger while the latter descends to force the nail to position.

6. MACHINES, NAIL-DRIVING, NAIL-FEEDING. Miscellaneous devices not peculiar to any special kind of machine or implement, but capable of general use for arranging and feeding loose nails for nailing machines or implements.

Search Classes—

1—NAILING AND STAPLING, subclasses 16, Machines, Box, Nail-driving, Nail-feeding, and 39, Machines, Shoe, Heel-nailing, Nail-feeding; and 16, BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 162, Distributors and feeders, and the subclasses thereunder.

CLASS 1—Continued.

7. MACHINES, BOOK, STAPLE FORMING AND SETTING. Machines adapted to cut short lengths from a continuous wire, bend them into staples, and insert and clench them in the work.

Search Class—

1—NAILING AND STAPLING, subclasses 2, Machines, Staple forming and setting; 11, Machines, Box, Staple forming and setting; 20, Machines, Shoe, Staple forming and setting; 48, Implements, Staple forming and setting; and 54, Machines, Blind slat and rod, Staple forming and setting.

8. MACHINES, BOOK, STAPLE-SETTING. Machines adapted to set previously formed staples which are fed by hand or by a chute to the setting jaws.

Search Class—

1—NAILING AND STAPLING, subclasses 4, Machines, Staple-setting; 13, Machines, Box, Staple-setting; 21, Machines, Shoe, Staple-setting; 50, Implements, Staple-setting; 55, Machines, Blind slat and rod, Staple-setting.

9. MACHINES, BOX, NAIL FORMING AND DRIVING. Machines adapted to cut the nail from a continuous wire, nail-string, nail strip or comb, and drive it into the box.

Search Class—

1—NAILING AND STAPLING, subclasses 27, Machines, Shoe, Wire nail forming and driving; and 51, Implements, Wire nail forming and driving.

10. MACHINES, BOX, NAIL-DRIVING. Miscellaneous box-nailing machines not classifiable in other subclasses of this class.

Search Class—

1—NAILING AND STAPLING, subclasses 1, Machines, Nail-driving; 19, Machines, Shoe, Nail-driving; and 47, Implements, Nail-driving.

11. MACHINES, BOX, STAPLE FORMING AND SETTING. Machines adapted to cut short lengths from wire, bend them to staple form, and set them into the corners of pasteboard, veneer and other light boxes.

Search Class—

1—NAILING AND STAPLING, subclasses 2, Machines, Staple forming and setting; 7, Machines, Book, Staple forming and setting; 20, Machines, Shoe, Staple forming and setting; 48, Implements, Staple forming and setting; and 54, Machines, Blind slat and rod, Staple forming and setting.

12. MACHINES, BOX, STAPLE FORMING AND SETTING, SHEET-METAL. Machines adapted to stamp out, bend up, and set from a continuous ribbon, or cut from a previously stamped continuous ribbon (usually of tin), many-pronged stays and set them into the corners of boxes of light materials.

13. MACHINES, BOX, STAPLE-SETTING. Machines adapted to set sheet-metal or wire stays or staples into box corners.

Search Class—

1—NAILING AND STAPLING, subclasses 4, Machines, Staple-setting; 8, Machines, Book, Staple-setting; 21, Machines, Shoe, Staple setting; 50, Implements, Staple-setting; and 55, Machines, Blind slat and rod, Staple-setting.

14. MACHINES, BOX ASSEMBLING AND NAILING. Machines in which the shoos or box-blanks are placed in receptacles or upon traveling belts and are automatically fed to position and nailed.

Search Classes—

1—NAILING AND STAPLING, subclasses 1, Machines, Nail-driving; 10, Machines, Box, Nail-driving; 19, Machines, Shoe, Nail-driving; and 47, Implements, Nail-driving; and 147 COOPERING, subclass 46, Basket forming and nailing.

CLASS 1—Continued.

15. MACHINES, BOX, NAIL-DRIVING, TABLES. Machines in which the novelty lies in the table to support the box while it is being nailed, the devices for adjusting, elevating, and depressing the table, clenching the nails, and also for clamping the box in the nailing position.
16. MACHINES, BOX, NAIL-DRIVING, NAIL-FEEDING. Machines in which the novelty lies in means for arranging and distributing loose nails in position to be driven, usually by hoppers and chutes.
- Search Class—**
1—NAILING AND STAPLING, subclasses 6, Machines, Nail-driving, Nail-feeding; and 39, Machines, Shoe, Heel-nailing, Nail-feeding.
17. ABOLISHED.
18. MACHINES, SHOE, NAIL-DRIVING, MAGAZINE. Machines in which loose nails are automatically fed to the driving position, usually from a chute and rotary hopper.
- Search Class—**
1—NAILING AND STAPLING, subclasses 6, Machines, Nail-driving, Nail-feeding; 16, Machines, Box, Nail-driving, Nail-feeding; and 46, Implements, Nail-driving, Magazine.
19. MACHINES, SHOE, NAIL-DRIVING. Miscellaneous loose nail-driving shoe machines not classifiable in any of the other subclasses.
- Search Classes—**
1—NAILING AND STAPLING, subclasses 1, Machines, Nail-driving; 10, Machines, Box, Nail-driving; and 47, Implements, Nail-driving; and 12 BOOT AND SHOE MAKING, subclass 2, Lasting and nailing machines.
20. MACHINES, SHOE, STAPLE FORMING AND SETTING. Machines adapted to cut and form staples and set them into the shoe.
- Search Class—**
1—NAILING AND STAPLING, subclasses 2, Machines, Staple forming and setting; 7, Machines, Book, Staple forming and setting; 11, Machines, Box, Staple forming and setting; 48, Implements, Staple forming and setting; 54 Machines, Blind slat and rod, Staple forming and setting.
21. MACHINES, SHOE, STAPLE-SETTING. Machines adapted to set staples.
22. MACHINES, SHOE, STRIP, NAIL. Machines adapted to cut nails from a metal ribbon or comb and drive the nail so formed.
- Search Classes—**
1—NAILING AND STAPLING, subclass 52, Implements, Strip, Nail and peg; and 10 BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 29, Nail-making, Cut nails, Tack strips.
23. MACHINES, SHOE, STRIP, PEG. Machines adapted to cut pegs from a peg-wood strip and drive them.
- Search Class—**
1—NAILING AND STAPLING, subclass 52, Implements, Strip, Nail, and peg.
24. MACHINES, SHOE, STRIP, TACK. Machines adapted to make tack-strips, those adapted to drive tacks from a strip, methods of making tack-strips, and novel forms of strips.
- Search Class—**
1—NAILING AND STAPLING, subclass 53, Implements, Strip, Tack.
- 24.5. MACHINES, SHOE, STRIPS. Strips in which pegs, nails, or tacks are mounted to be fed into the various strip-machines.
25. MACHINES, SHOE, WIRE INSERTING AND CUTTING. Machines adapted to force wire into the work and afterward cut it off even with the surface of the sole.
26. MACHINES, SHOE, WIRE INSERTING AND CUTTING, SCREW. Machines adapted to insert screw wire by a rotary movement of the spindle and afterward cut the wire even with the surface of the sole.
27. MACHINES, SHOE, WIRE-NAIL FORMING AND DRIVING. Machines which form a nail from a continuous wire and drive it.
- Search Class—**
1—NAILING AND STAPLING, subclasses 9, Machines, Box, Nail forming and driving; and 51, Implements, Wire nail forming and driving.
28. MACHINES, SHOE, WIRE-NAIL FORMING AND DRIVING, DIRECT WIRE-FEED. Machines in which the wire or nail string is fed into a throat directly beneath the plunger and there cut and driven.
29. MACHINES, SHOE, WIRE-NAIL FORMING AND DRIVING, PIVOTED NAIL-CARRIER. Machines in which the wire is fed into a pivoted carrier and when the nail is cut the carrier is swung in position to bring the nail beneath the plunger.
30. MACHINES, SHOE, WIRE-NAIL FORMING AND DRIVING, RECIPROCATING NAIL-CARRIER. Machines in which the carrier, which usually shears the nail off by movement, reciprocates from the position for receiving the end of the wire to that which brings the nail in line with the plunger.

CLASS 1—Continued.

31. MACHINES, SHOE, WIRE-NAIL FORMING AND DRIVING, ROTARY NAIL-CARRIER. Machines in which the carrier rotates from the position of receiving the wire end to bring the cut-off nail in line with the driver.
32. MACHINES, SHOE, HEEL-NAILING. Various types of machines for driving loose nails into shoe-heels to secure them to the shoes.
33. MACHINES, SHOE, HEEL PRESSING AND LOADING. Machines adapted to press and tack the heel-lifts together, to prick them for loading, or to prick and also load them.
34. MACHINES, SHOE, HEEL-PLATE ATTACHING. Machines for attaching heel plates to shoe or boot heels.
35. MACHINES, SHOE, HEEL-NAILING, CROSS-HEAD AND TURRET. Machines in which the reciprocating cross-head supports a turret or revolving head which carries the gangs of awls, drivers, the spanker, etc.
36. MACHINES, SHOE, HEEL-NAILING, CROSS-HEAD. That type of machine which has a reciprocating cross-head.
37. MACHINES, SHOE, HEEL-NAILING, Laterally-ADJUSTABLE DRIVER-BLOCK. Machines in which the driver-block is moved laterally to bring the awl or driver gang or the spanker into operative position.
38. MACHINES, SHOE, HEEL-NAILING, MULTIPLE ROTARY HEEL-SUPPORT. Machines in which several jacks or dies are mounted upon a rotary support.
39. MACHINES, SHOE, HEEL-NAILING, NAIL-FEEDING. Devices for arranging and distributing or feeding loose nails.
- Search Class—**
1—NAILING AND STAPLING, subclasses 6, Machines, Nail-driving, Nail-feeding; and 16, Machines, Box, Nail-driving, Nail-feeding.
40. MACHINES, PACKET-LOOPING. Machines adapted to insert hanging-loops, usually of wire, into the corners of packages of paper or pamphlets.
41. MACHINES, SHOE, WORK-SUPPORTS. Horns and jacks to support the shoe in nailing position.
42. ABOLISHED.
43. LATH AND SHINGLE NAILING. Special machines for holding and nailing lath or shingles to position.
44. GLAZIERS' POINT-SETTERS. Machines and implements for setting glaziers' brads or points.
45. MAGAZINE-HAMMERS. Hammers which are provided with magazines into which loose nails are placed and fed to driving position.
46. IMPLEMENTS, NAIL-DRIVING, MAGAZINE. Implements adapted to drive loose nails which are fed by suitable chutes from hoppers, magazines, etc., to a position beneath the plunger.
- Search Class—**
1—NAILING AND STAPLING, subclasses 6, Machines, Nail-driving, Nail-feeding; 16, Machines, Box, Nail-driving, Nail-feeding; and 18, Machines, Shoe, Nail-driving, Magazine.
47. IMPLEMENTS, NAIL-DRIVING. Miscellaneous nailing devices, nail-holders, etc., not classified in any of the other subclasses.
- Search Class—**
1—NAILING AND STAPLING, subclasses 1, Machines, Nail-driving; 10, Machines, Box, Nail-driving; and 19, Machines, Shoe, Nail-driving.
48. IMPLEMENTS, STAPLE FORMING AND SETTING. Implements which form the staple from a continuous wire or cut it from a prepared metal staple-strip, and then set the staple in the work.
- Search Class—**
1—NAILING AND STAPLING, subclasses 2, Machines, Staple forming and setting; 7, Machines, Book, Staple forming and setting; 11, Machines, Box, Staple forming and setting; 20, Machines, Shoe, Staple forming and setting; and 54, Machines, Blind slat and rod, Staple forming and setting.
49. IMPLEMENTS, STAPLE-SETTING, MAGAZINE. Implements in which the loose staples are placed in a magazine or hopper and are automatically fed to a setting position.
- Search Class—**
1—NAILING AND STAPLING, subclass 3, Machines, Staple-setting, Magazine.
50. IMPLEMENTS, STAPLE-SETTING. Implements which simply set staples which are placed by hand in the stapling-jaws.
- Search Class—**
1—NAILING AND STAPLING, subclasses 4, Machines, Staple-setting; 8, Machines, Book, Staple-setting; 21, Machines, Shoe, Staple-setting; and 55, Machines, Blind slat and rod, Staple-setting.

CLASS 1—Continued.

51. **IMPLEMENTS, WIRE-NAIL FORMING AND DRIVING.** Implements which cut the nail from wire or a nail-string and drive the nail.

Search Class—

1—**NAILING AND STAPLING**, subclasses 9, Machines, Box, Nail forming and driving; and 27, Machines, Shoe, Wire nail forming and driving.

52. **IMPLEMENTS, STRIP, NAIL AND PEG.** Implements adapted to cut a nail from a metal strip (either ribbon or comb) or a peg from a peg-wood strip, which strip is automatically fed to position, and then drive the nail or peg.

Search Class—

1—**NAILING AND STAPLING**, subclasses 22, Machines, Shoe, Strip, Nail; and 23, Machines, Shoe, Strip, Peg.

53. **IMPLEMENTS, STRIP, TACK.** Implements adapted to drive tacks from a tack-strip.

Search Class—

1—**NAILING AND STAPLING**, subclass 24, Machines, Shoe, Strip, Tack.

54. **MACHINES, BLIND SLAT AND ROD, STAPLE FORMING AND SETTING.** Blind-wiring machines which form the wire staple and set it into the slats or slat-rods, or both.

CLASS 1—Continued.**Search Class—**

1—**NAILING AND STAPLING**, subclasses 2, Machines, Staple forming and setting; 7, Machines, Book, Staple forming and setting; 11, Machines, Box, Staple forming and setting; 20, Machines, Shoe, Staple forming and setting; and 49, Implements, Staple forming and setting.

55. **MACHINES, BLIND SLAT AND ROD, STAPLE-SETTING.** Machines which wire the slats or rods without forming the staples. The latter are usually fed down an incline.

Search Class—

1—**NAILING AND STAPLING**, subclasses 4, Machines, Staple-setting; 8, Machines, Book, Staple-setting; 13, Machines, Box, Staple-setting; 21, Machines, Shoe, Staple-setting; and 50, Implements, Staple-setting.

56. **PACKAGES.** Packages of fasteners to be used in nailing or stapling where the package is more than a mere box or container. The fasteners are generally so held that they may be readily discharged into the magazine attached to the nailing or stapling machine, or the package itself forms such magazine.

Search Class—

213—**BUTTON, EYELET, AND RIVET SETTING**, subclass 28, Packages.

CLASS 6.—BEE CULTURE.

DEFINITIONS.

Class.

This class includes constructions specially adapted to be used in bee culture. Animal culture in general is classified in Class 119, ANIMAL HUSBANDRY.

Subclasses.

1. BEEHIVES. Miscellaneous beehive construction not classifiable in any of the following subclasses.
2. BEEHIVES, FRAMES. Beehive construction in which honeycomb-frames are used.
3. BEEHIVES, FRAMES, PIVOTED. Beehives arranged for honeycomb-frames in which the frames are pivoted or hinged. Commonly the frames are arranged in the hive similar to the leaves in a book.
4. BEEHIVES, ENTRANCES AND EXITS. Entrances and exits of beehives. Moth-traps are included in this subclass, as the trap commonly involves a modification of the hive-entrance.

CLASS 6—Continued.

5. BEEHIVES, BEE-FEEDERS. Means for feeding the bees applied to beehives.
6. BEEHIVES, STANDS. Stands and supports for beehives.
7. APPLIANCES, SWARM. Constructions for hiving and handling bee swarms.
8. APPLIANCES, HIVE-CONNECTORS. Constructions connecting one hive with another for the purpose of transferring bees.
9. APPLIANCES, QUEEN-BEE CELLS AND CAGES. Devices for protecting queen-bee cells, also cages for queen bees, commonly for transportation.
10. APPLIANCES, COMB-FRAMES. Frames and boxes for honeycombs.
11. APPLIANCES, COMB-FOUNDATION. Artificial combs and foundations and processes and apparatus for making the same.
12. APPLIANCES, IMPLEMENTS. Various implements employed in bee culture.



CLASS 7.—COMPOUND TOOLS.

DEFINITIONS.

Class.

This class includes miscellaneous compound tools. Recognized specific combinations of tools will be classified and given titles as such and placed in the appropriate art classes. Novel features in specific tools forming parts of structures classified in COMPOUND TOOLS will be cross-referenced into the appropriate tool class.

Subclasses.

1. MISCELLANEOUS. Compound tools not elsewhere classified.
2. MISCELLANEOUS, INTEGRAL. Miscellaneous compound tools consisting of a single piece of material.
3. TYPE, PLIERS. Compound tools having the general structure of pliers.
4. TYPE, PLIERS, MODIFIED HANDLES. Plier-handles modified by tools carried on them.
5. TYPE, PLIERS, MODIFIED HANDLES, PIVOTED AUXILIARY TOOLS. Plier-handles modified by tools pivoted to them.
6. TYPE, SCISSORS. Compound tools having the general structure of scissors.
7. TYPE, MONKEY-WRENCH. Compound tools having the general structure of a monkey-wrench.

CLASS 7—Continued.

8. TYPE, HAMMER. Compound tools having the general structure of a hammer.
9. TYPE, HAMMER, FIXED-FORM. Tools of the hammer type in which the relative positions of the various parts are not altered during the various operations of which the device is capable.
10. TYPE, MINER'S CANDLESTICK. A candlestick provided with a candle-socket and a pointed blade to be stuck in the wall to support the candlestick, in combination with various tools, such as knife-blades, fuse cappers, crimpers, etc.
Search Class—
86—ARMS, PROJECTILES, AND EXPLOSIVE CHARGES, MAKING subclass 22, Loading fireworks and blasting charges, Implements, Fuse.
11. TYPE, POCKET-KNIFE. Compound tools having the general structure of a pocket-knife.
12. TYPE, CROWBAR. Compound tools having the general structure of a crowbar. Mainly wire-fence and railroad tools.
13. TYPE, HANDSAW. Handsaws combined with straight-edges, levels, etc., to be used as gages, try-squares, etc.
14. TYPE, FORK. Compound tools having the general structure of a culinary fork.
15. HOLDERS. Handles and holders to be inserted in bit-stocks are equipped with a number of bits or tools.
16. HOLDERS, PIVOTED TOOLS. Bits pivoted to holders so that any one of them can be swung into or out of position for use.

CLASS 9.—BOATS AND BUOYS.

DEFINITIONS.

Class.

This class includes such structure and attachments as are peculiar to small manually-propelled craft: channel, obstruction, safe, life, and other buoys; life-rafts, and, from analogy, some life-saving apparatus for reaching shore or another vessel from a wrecked vessel; the boat hoisting and lowering davits and tackle carried aboard ship; also, swimming appliances.

Subclasses.

1. BOATS. Miscellaneous boats.
2. BOATS, SECTIONAL AND FOLDING. Various collapsible and sectional boats.
3. BOATS, LIFE-BOATS. Boats especially designed for hazardous service and intended, by means of air-compartments or other arrangements, to remain afloat under all conditions and to capsize with difficulty.
Search Class—
9—BOATS AND BUOYS, subclass 11, Life-rafts.
4. BOATS, LIFE-BOATS, INCLOSED. Life boats adapted to receive the passengers within an air chamber or space which can be closed water-tight. Usually the entire boat is one large air-chamber, into which the passengers enter by a hatchway, which is then closed water-tight. In some cases means is provided for working a propeller or oars.
Search Class—
9—BOATS AND BUOYS, subclass 10, Buoys, Safes.
5. BOATS, HUNTING. Boats especially designed for the concealment of the occupant and for more or less quiet propulsion to aid the hunter to approach the game.
6. BOATS, HULL CONSTRUCTION. Such hull structure as is peculiar to small craft.
Search Class—
114—SHIPS, subclass 9, Building.
- 6.5. BOATS, HULL CONSTRUCTION, FORMERS AND FRAMERS. Machines or implements for bending, shaping, stamping, or temporarily holding in place the frames, timbers, or sides of the hull.
7. BOATS, SEATS AND FOOT-SUPPORTS. Rowers' or passengers' seats or foot-braces.
8. BUOYS. Miscellaneous buoys. Channel and obstruction buoys are here included.
Search Class—
116—SIGNALS, subclass 13, Signals, Fog, for sounding-buoys.
- 8.3. BUOYS, ILLUMINATING. The combination of a floating support and an illuminating device.
Search Classes—
67—ILLUMINATING BURNERS, and 176, ELECTRIC LAMPS, for the illuminating devices.
48—GAS, HEATING AND ILLUMINATING, for gas generation and storage.
102—AMMUNITION AND EXPLOSIVE DEVICES, subclass 26, Projectiles, where the combined illuminating device and floating support is designed to be shot from a gun.
- 8.5. BUOYS, OIL-DISTRIBUTERS. Buoys provided with means for distributing oil on the surface of the waves.
Search Class—
114—SHIPS, subclass 232, Oil-distributors, and 61, HYDRAULIC ENGINEERING, subclass 54, Harbors, Fortifications and defenses, for other types of oil distribution.
9. BUOYS, WRECK-INDICATING. Buoys adapted on the sinking of a vessel to become unseated and on rising to the surface unreel a retaining-line and then float over the wreck to indicate the location of the latter.

CLASS 9—Continued.

10. BUOYS, SAFES. Floats or buoys adapted to contain valuables and to be thrown overboard when the vessel is in danger of sinking. Some are adapted to support persons who cling to them when in the water.
Search Class—
9—BOATS AND BUOYS, subclass 4, Boats, Life-boats, Inclosed.
11. LIFE-RAFTS. Life-saving rafts for use in cases of disasters at sea.
Search Class—
9—BOATS AND BUOYS, subclass 3, Boats, Life-boats.
12. LIFE-RAFTS, SHIP PARTS AND FURNITURE. Those ship parts such as berths, decks, cabins, etc.; also, such ships' furniture as sofas, settees, chairs, stools, tables, etc., which are adapted for use as life-rafts.
13. LIFE-RAFTS, MATTRESS. Bed-mattresses adapted also for service as life-rafts.
14. LIFE-SAVING APPARATUS. Various devices for saving life at sea, such as arrangements and apparatus for getting life-lines or people ashore or to another ship, life-lines for bathers, nets to prevent bathers being carried out too far, overwater-lines to which swimmers may have a traveling supporting-line attached, etc.
Search Class—
102—AMMUNITION AND EXPLOSIVE DEVICES, subclass 34, Projectiles, Line-carrying.
15. RAFTING AND BOOMING. Apparatus and methods for rafting or booming floating timber.
16. RAFTING AND BOOMING, TIMBER-COUPPLINGS. Devices for temporarily attaching timbers together to better float them.
17. LIFE-PRESERVERS. Buoyant devices adapted to be attached to the person to prevent drowning.
18. LIFE-PRESERVERS, MECHANICAL PROPULSION. Life-preservers which have some sort of propeller or paddle-wheel which is adapted to be operated by hand or foot power.
19. LIFE-PRESERVERS, SELF-INFLATING. Life-preservers carrying chemicals which on contact with the water will generate an inflating-gas.
20. LIFE-PRESERVERS, GARMENT. Life-preservers fashioned in some degree after a garment.
21. SWIMMING APPLIANCES. Devices adapted to be attached to the swimmer's limbs or grasped in his hands and which are designed to aid the swimmer's efforts.
22. HOISTING AND LOWERING. Ships' davits or their equivalents, tackle, etc., used to hoist or lower boats over the ship's side.
23. HOISTING AND LOWERING, DETACHING DEVICES. Devices for releasing the lowering-tackle from the boat.
Search Class—
114—SHIPS, subclasses 2, Anchor trippers, and 16, Couplings and tow-lines.
24. OARS. Rowing-oars for boats, rafts, etc.
25. OARS, BOW-FACING. Oars adapted to permit the operator to face in the direction the boat is traveling and yet pull in the usual manner.
26. ROWLOCKS. Boat oar-locks.

CLASS 10.—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING.

DEFINITIONS.

Class.

This class includes special machines and devices for manufacturing bolts, rivets, nails, screws, nuts, and washers and also machines and implements for forming screw-threads, both external and internal, except such threads as are produced by rolling or may be formed as a secondary function of an organized lathe.

Machines for making nuts and washers by cold-punching and shearing only will be found in appropriate subclasses of class 164, CUTTING AND PUNCHING SHEETS AND BARS.

Machines for making lock-washers, etc., by bending only will be found in class 153, METAL-BENDING.

Machines for die-rolling screw-threads will be found in class 80, METAL-ROLLING, Screw-Threads.

Machines in which the cutting of screw-threads is an incidental function will be found in class 82, TURNING, Lathes, Screw-Cutting.

Machines often used for making "machine-screws," but equally well adapted for making other small parts—such as spoke-nipples, binding-posts, etc.—will be found in appropriate subclasses in class 29, METAL-WORKING, Combined Machines.

In this class an art grouping has been followed as closely as possible, similar structures being indicated by similar subclass titles and connected for search purposes by search-carding.

Subclasses.

1. MISCELLANEOUS. Machines and devices for making bolts, nails, screws, etc., not otherwise classifiable.

2. SCREW-MAKING. Machines for making screws, usually wood-screws, either for finishing the screws complete or for performing such operations or groups of operations as are not otherwise classified in this class.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 101, Screw-threading, Machines, Chasing-cutter, and 102, Screw-threading, Machines, Chasing-cutter, Rotary, for machines for threading only.

29—METAL-WORKING, Combined Machines, and appropriate subclasses, for machines for making "machine-screws," spoke-nipples, etc.

3. SCREW-MAKING, HEAD NICKING AND SHAVING. Machines for sawing or swaging the driving-slot in the screw-head and for circumferentially shaving it to give it the proper form and to remove any bur produced by the nicking operation. In some cases the head is shaved both before and after the nicking operation.

4. SCREW-MAKING, POINTING AND THREADING. Machines for giving a conical point to the screw-blank and for threading it where these operations are performed by separate mechanisms.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 101, Screw-threading, Machines, Chasing-cutter, and 102, Screw-threading, Machines, Chasing-cutter, Rotary, where the point is formed by a chasing-cutter which also threads the remainder of the screw.

5. SCREW-MAKING, HEAD-NICKING. Machines for making the driving-slot in the heads of wood-screws. The slot is usually produced by a rotary saw; but the machines are to be distinguished from the general class of milling-machines in that they have special mechanism for holding and feeding the screw-blanks to the cutter.

6. SCREW-MAKING, HEAD-NICKING, ROTARY WORK-HOLDER. Screw-nicking machines in which the screw-blanks are held in and carried past the nicking apparatus by a rotary table or carrier having a step-by-step movement.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 13, Bolt and rivet making, Rotary multiple dies; 153, Capping nails and screws, Rotary work-holder; 39, Nail-making, Cut nails, Horseshoe-nails, Finishing, Rotary work-holder; 52, Nail-making, Wire nails, Rotary work-holder; 69, Nail-making, Wrought nails, Horseshoe-nails, Rotary work-holder; 60, Nail-making, Wrought nails, Spikes, Rotary work-holder, and 77, Nut and washer making, Forging, Rotary multiple dies, for similar forms of work-holder.

7. SCREW-MAKING, HEAD-NICKING, PUNCH AND DIE. Machines and devices for nicking screw-heads in which the slot is produced by a blow or thrust from a ribbed punch, the screw-blank being meanwhile held in suitable cooperating gripping-dies.

8. SCREW-MAKING, HEAD-SHAVING. Machines for trimming by a peripheral cut the head of a wood-screw, either to smooth and shape it or to remove the bur produced in the nicking operation.

CLASS 10—Continued.

9. SCREW-MAKING, POINTING. Machines for producing a conical or conoidal point upon a wood-screw blank.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 101, Screw-threading, Machines, Chasing-cutter, where the blank is pointed by the threading-chaser simultaneously with the threading of the remainder of the blank, the whole operation being considered threading; subclasses 4, Screw-making, Pointing and threading, and 21, Bolt and rivet making, Bolt-pointing.

10. SCREW-MAKING, PROCESSES. Various methods or groups of operations used in the manufacture of screws, including mechanical steps and methods of finishing, but excluding apparatus.

11. BOLT AND RIVET MAKING. Machines and devices for making bolts and rivets, usually for forming suitable heads on heated blanks.

12. BOLT AND RIVET MAKING, MULTIPLE-HEADER. Machines having a series of punches and capable of forming two or more articles simultaneously. They frequently have a series of dissimilar forming-sockets for delivering first an upsetting and then a forming and finishing blow.

13. BOLT AND RIVET MAKING, ROTARY MULTIPLE DIES. Machines for making bolts and rivets, usually for heading heated blanks, having sets of dies arranged in a rotary die-carrier capable of a step-by-step movement, so as to bring the blanks successively beneath the heading-punch or other shaping mechanism. The dies may be arranged either radially or in a circular set parallel to the axis of the carrier.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 39, Nail-making, Cut nails, Horseshoe-nails, Finishing, Rotary work-holder; 52, Nail-making, Wire nails, Rotary work-holder; 69, Nail-making, Wrought nails, Horseshoe-nails, Rotary work-holder; 60, Nail-making, Wrought nails, Spikes, Rotary work-holder; 77, Nut and washer making, Forging, Rotary multiple dies; 6, Screw-making, Head-nicking, Rotary work-holder, and 153, Capping nails and screws, Rotary work-holder, for similar rotary work-holders.

14. BOLT AND RIVET MAKING, COTTER-SLOT PUNCHING. Machines having means for punching a transverse slot near the point of the bolt-blank, usually in addition to means for simultaneously heading the blank.

15. BOLT AND RIVET MAKING, RECIPROCATING DIE AND HEADER. Machines for heading bolt and rivet blanks in which one or both parts of the blank-gripping dies reciprocate transversely of the line of feed of the stock to grip and release the blank and the heading mechanism or punch-carrier reciprocates in the direction of the axis of the blank to upset and head the same while held by the gripping-dies. The latter dies sometimes sever the blank from the stock-rod while closing.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 49, Nail-making, Wire nails, Reciprocating die and header, and 57, Nail-making, Wrought nails, Spikes, Reciprocating die and header, for similar structures.

16. BOLT AND RIVET MAKING, RECIPROCATING DIE AND HEADER, TOGGLE-CLOSING DIES. Machines like the last preceding in which the gripping-dies are operated by a toggle, the latter often having yielding parts or break-pieces to prevent injury to the dies.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 50, Nail-making, Wire nails, Reciprocating die and header, Toggle-closing dies, for similar structures.

17. BOLT AND RIVET MAKING, RECIPROCATING DIE AND HEADER, WEDGE-CLOSING DIES. Machines of the general gripping-die and header type in which the transverse movement of the dies is effected by wedges thrust behind them or by a diagonal cam-slot acting in a substantially similar manner.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 51, Nail-making, Wire nails, Reciprocating die and header, Wedge-closing dies.

18. BOLT AND RIVET MAKING, SIDE-SWAGING. Machines for heading and finishing bolts and rivets, usually bolts, in which a polygonal head or head-and-shank are formed by means of an axially-moving header working in alternation with transversely-moving hammers or dies which shape the sides of the head or shank of the article.

19. BOLT AND RIVET MAKING, BOLT-HEAD FINISHING. Machines and devices for finishing or "machining" the upper, lower, and side surfaces of rough-forged bolt-heads.

CLASS 10—Continued.

20. **BOLT AND RIVET MAKING, BOLT-HEAD FINISHING, BROACHING.** Machines and devices for finishing the sides of rough-forged bolt-heads by driving or thrusting them through a trimming-die having suitably-arranged cutters.
21. **BOLT AND RIVET MAKING, BOLT-POINTING.** Machines for finishing and shaping the point of a bolt-blank by means of formed cutters rotating relatively to the bolt, usually to facilitate its insertion in a nut or tapped hole.
22. **BOLT AND RIVET MAKING, ANVILS.** Devices for supporting dies, foot-operated vises, etc., to facilitate the hand-forging of bolt-heads.
23. **BOLT AND RIVET MAKING, SAFETY DEVICES.** Yielding devices, easily-replaced break-pieces, etc., for protecting the dies and other important parts of bolt and rivet machines from breakage when a blank is improperly gripped or when some foreign substance falls between the dies or among the working parts.
24. **BOLT AND RIVET MAKING, DIES.** Dies especially designed to grip, sever, or swage bolt and rivet blanks.
Search Class—
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 7, Screw-making, Head-nicking, Punch and die; 53, Nail-making, Wire nails, Dies; 61, Nail-making, Wrought nails, Spikes, Dies, and 70, Nail-making, Wrought nails, Horseshoe-nails, Dies.
25. **BOLT AND RIVET MAKING, SHEARS.** Cutting devices either integral with or attached to the gripping-dies of bolt and rivet heading machines or so located upon some other part of the machine as to be available in cutting stock-rods into suitable lengths for bolt and rivet blanks.
Note.—These devices are special mechanisms applied to bolt and rivet machines and not so general in their function as to warrant their classification in class 164, CUTTING AND PUNCHING SHEETS AND BARS.
26. **BOLT AND RIVET MAKING, HEADING PUNCHES.** Devices inserted in the reciprocating header of a bolt or rivet machine for forming special heads or forming heads in some special manner.
27. **BOLT AND RIVET MAKING, PROCESSES.** Methods of making bolts and rivets, including mechanical methods and excluding apparatus.
Search Class—
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, other process subclasses.
28. **NAIL-MAKING, CUT NAILS.** Miscellaneous machines and devices for making nails by cutting them, usually transversely, from a suitable nail-plate and in most cases subsequently heading them.
29. **NAIL-MAKING, CUT NAILS, TACK-STRIPS.** Machines for making strips of tacks arranged side by side with united heads and resembling the teeth of a comb, such strips being usually used in automatic nailing-machines.
Search Class—
1—NAILING AND STAPLING, Machines, Shoe, Strip, Tack, for machines which both make the strips and *separate and drive* the tacks.
30. **NAIL-MAKING, CUT NAILS, CUTTING AND HEADING.** Machines for severing the nail-blank from the nail-plate and forming a head upon the severed blank.
31. **NAIL-MAKING, CUT NAILS, CUTTING AND POINTING.** Machines for severing nail-blanks from a nail-plate and pointing said blanks.
32. **NAIL-MAKING, CUT NAILS, CUTTING.** Machines and devices for severing nail-blanks from nail-plates.
Search Class—
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 30, Nail-making, Cut nails, Cutting and heading, and 31, Nail-making, Cut nails, Cutting and pointing.
33. **NAIL-MAKING, CUT NAILS, NAIL-PLATES.** Plates of suitable cross-section, contour, material, etc., for stock from which nails may be produced by cutting.
Search Class—
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 41, Nail-making, Cut nails, Horseshoe-nails, Nail-plates.
34. **NAIL-MAKING, CUT NAILS, PROCESSES.** Different steps or sets of steps, mechanical and otherwise, in the manufacture of cut nails. No apparatus included.
Search Class—
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 42, Nail-making, Cut nails, Horseshoe-nails, Processes.
35. **NAIL-MAKING, CUT NAILS, DIES.** Dies suitable for severing nail-blanks from the plate or for shaping by cutting, or both.
Search Class—
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 40, Nail-making, Cut nails, Horseshoe-nails, Dies, and 53, Nail-making, Wire nails, Dies.
36. **NAIL-MAKING, CUT NAILS, HORSESHOE-NAILS.** Machines for producing by cutting from a plate nails of suitable form, etc., for fastening horseshoes.

CLASS 10—Continued.

37. **NAIL-MAKING, CUT NAILS, HORSESHOE-NAILS, CUTTING AND FINISHING.** Machines for severing horseshoe-nails from a plate and for performing some subsequent operation or operations, such as pointing, head-shaping, stiffening by die-swaging, etc.
38. **NAIL-MAKING, CUT NAILS, HORSESHOE-NAILS, FINISHING.** Machines for trimming, pointing, swaging, and otherwise completing cut horseshoe-nails.
Search Class—
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 37, Nail-making, Cut nails, Horseshoe-nails, Cutting and finishing.
39. **NAIL-MAKING, CUT NAILS, HORSESHOE-NAILS, FINISHING, ROTARY WORK-HOLDER.** Machines for finishing cut horseshoe-nails in which the cut blanks are carried to the various finishing mechanisms by a rotary table or holder having a step-by-step movement.
Search Class—
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 6, Screw-making, Head-nicking, Rotary work-holder; 52, Nail-making, Wire nails, Rotary work-holders; 60, Nail-making, Wrought nails, Horseshoe-nails, Rotary work-holder, and 158, Capping nails and screws, Rotary work-holder, for similar devices.
40. **NAIL-MAKING, CUT NAILS, HORSESHOE-NAILS, DIES.** Dies especially designed to cut and trim horseshoe-nails. They are not adapted to swage or shape by pressure.
Search Class—
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 35, Nail-making, Cut nails, Dies, and 53, Nail-making, Wire nails, Dies.
41. **NAIL-MAKING, CUT NAILS, HORSESHOE-NAILS, NAIL-PLATES.** Blanks or plates of suitable section, contour, material, etc., to especially adapt them for use as stock from which horseshoe-nails may be cut.
Search Class—
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 33, Nail-making, Cut nails, Nail-plates.
42. **NAIL-MAKING, CUT NAILS, HORSESHOE-NAILS, PROCESSES.** Steps or sets of steps, usually mechanical, used in the manufacture of cut horseshoe-nails. No apparatus included.
Search Class—
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 34, Nail-making, Cut nails, Processes.
43. **NAIL-MAKING, WIRE NAILS.** Miscellaneous machines and devices for making nails from a coil of wire, usually by heading the free end of the wire as fed in and then pointing and severing the nail by suitable dies.
44. **NAIL-MAKING, WIRE NAILS, MAKING AND DISTRIBUTING.** Machines for forming nails from coils of wire and feeding them to suitably-arranged chutes, so that they may be driven in shoe-heels, boxes, etc.
Search Class—
1—NAILING AND STAPLING, subclasses 9, Machines, Box, Nail-forming and driving, and 27, Machines, Shoe, Wire-nail forming and driving, for machines which make, distribute, and drive the nails.
45. **NAIL-MAKING, WIRE NAILS, STRING-NAILS.** Machines for forming strings or reels of nails joined head to point that they may be easily broken apart and driven by suitable driving machines.
Search Class—
1—NAILING AND STAPLING, subclasses 9, Machines, Box, Nail-forming and driving, and 27, Machines, Shoe, Wire-nail forming and driving, for machines which both make the nail-string and subsequently sever nails therefrom and *drive* them.
46. **NAIL-MAKING, WIRE NAILS, SPIRAL-SHANK.** Machines for producing wire nails with helically-ribbed shanks, the helix being formed either by twisting a wire of polygonal cross-section or by rolling or cutting a helical groove in the shank.
47. **NAIL-MAKING, WIRE NAILS, MULTIPLE-HEADER.** Machines having a plurality of heading punches and capable of forming more than one nail at each reciprocation of the punch carrier or carriers.
48. **NAIL-MAKING, WIRE NAILS, MULTIPLE-HEADER, OPPOSITE.** Machines like the last preceding which form a plurality of nails by cutting off a length of wire sufficient for two nails and heading its opposite ends while held in a die which usually points and divides the double blank at the center.
49. **NAIL-MAKING, WIRE NAILS, RECIPROCATING DIE AND HEADER.** Machines for making wire nails in which one or both parts of the wire-gripping dies reciprocate transversely of the line of feed of the wire to grip and release the wire and the header reciprocates in the direction of the length of the nail to head the same while held by the gripping dies. The dies usually point and sever as well as hold the nail.
Search Class—
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 15, Bolt and rivet making, Reciprocating die and header, and 57, Nail-making, Wrought nails, Spikes, Reciprocating die and header.

CLASS 10—Continued.

50. NAIL-MAKING, WIRE NAILS, RECIPROCATING DIE AND HEADER, TOGGLE-CLOSING DIES. Machines like the last preceding in which the gripping-dies are actuated by a toggle.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 16, Bolt and rivet making, Reciprocating die and header, Toggle-closing dies.

51. NAIL-MAKING, WIRE NAILS, RECIPROCATING DIE AND HEADER, WEDGE-CLOSING DIES. Machines of the gripping-die and header type in which the dies are closed by wedges thrust behind them or by means of a diagonal cam slot acting in a substantially similar manner.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 17, Bolt and rivet making, Reciprocating die and header, Wedge-closing dies.

52. NAIL-MAKING, WIRE NAILS, ROTARY WORK-HOLDER. Machines for making wire nails in which the blanks are carried to the headers and other forming devices by means of a rotatable work-holder having a step-by-step movement.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 6, Screw-making, Head-nicking, Rotary work-holder; 13, Bolt, and rivet making, Rotary multiple dies; 39, Nail-making, Cut nails, Horseshoe-nails, Finishing, Rotary work-holder; 60, Nail-making, Wrought nails, Spikes, Rotary work-holder; 69, Nail-making, Wrought nails, Horseshoe-nails, Rotary work-holder; 77, Nut and washer making, Forging, Rotary multiple dies, and 158, Capping nails and screws, Rotary work-holder, for similar work-holders.

53. NAIL-MAKING, WIRE NAILS, DIES. Dies especially adapted to hold for heading, to corrugate, nick, point, sever, etc., wire nails.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 24, Bolt and rivet making, Dies; 61, Nail-making, Wrought nails, Spikes, Dies, and 70, Nail-making, Wrought nails, Horseshoe-nails, Dies.

54. NAIL-MAKING, WIRE NAILS, PROCESSES. Patents describing steps or sets of steps, mechanical and otherwise, in the making and finishing of wire nails.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, other process subclasses.

55. NAIL-MAKING, WROUGHT NAILS. Machines and devices not otherwise classifiable for making nails by shaping them from heated stock rods or plates.

56. NAIL-MAKING, WROUGHT NAILS, SPIKES. Machines and devices not otherwise classified for making spikes from heated stock. The heavy character of the work generally necessitates corresponding changes in the methods of manufacture and design of the machine.

57. NAIL-MAKING, WROUGHT NAILS, SPIKES, RECIPROCATING DIE AND HEADER. Machines for heading and sometimes completing spikes in which one or both parts of the blank-gripping dies reciprocate transversely to the line of feed of the stock to grip and release the blank, the header meanwhile reciprocating in the direction of the axis of the blank to upset and head the same while held by the gripping dies. The latter dies sometimes point and sever as well as hold the blank.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 15, Bolt and rivet making, Reciprocating die and header, and 49, Nail-making, Wire nails, Reciprocating die and header.

58. NAIL-MAKING, WROUGHT NAILS, SPIKES, ROLLER-DIE. Spike-machines in which the spikes are partly but not wholly formed by means of dies set in the periphery of a roll. Heading, pointing, and other shaping means in addition to the die-rolls are included.

Search Class—

80—METAL-ROLLING, DIE-ROLLING, and subclasses thereunder, for machines which complete spikes by rolling alone.

59. NAIL-MAKING, WROUGHT NAILS, SPIKES, POINTING. Machines and devices for sharpening the entering ends of spikes.

60. NAIL-MAKING, WROUGHT NAILS, SPIKES, ROTARY WORK-HOLDER. Machines for making or finishing spikes in which the blanks are carried in succession to the various shaping mechanisms by a rotatable table or holder having a step-by-step movement.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 6, Screw-making, Head-nicking, Rotary work-holder; 13, Bolt and rivet making, Rotary multiple dies; 39, Nail-making, Cut nails, Horseshoe-nails, Finishing, Rotary work-holder; 62, Nail-making, Wire nails, Rotary work-holder; 69, Nail-making, Wrought nails, Horseshoe-nails, Rotary work-holder; 77, Nut and washer making, Forging, Rotary multiple dies, and 158, Capping nails and screws, Rotary work-holder, for similar rotatable holders.

61. NAIL-MAKING, WROUGHT NAILS, SPIKES, DIES. Dies especially adapted for the shaping of forged spikes.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 24, Bolt and rivet making, Dies; 53, Nail-making, Wire nails, Dies, and 70, Nail-making, Wrought nails, Horseshoe-nails, Dies.

CLASS 10—Continued.

62. NAIL-MAKING, WROUGHT NAILS, SPIKES, BLANKS. Various forms of stock rods, rolled plates, etc., adapted to facilitate and cheapen the manufacture of spikes.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 33, Nail-making, Cut nails, Nail-plates, and 41, Nail-making, Cut nails, Horseshoe-nails, Nail-plates.

63. NAIL-MAKING, WROUGHT NAILS, SPIKES, PROCESSES. Various steps and sets of steps, including mechanical methods and excluding apparatus used in the manufacture of spikes.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 10, Screw-making, Processes; 27, Bolt and rivet making, Processes, and 71, Nail-making, Wrought nails, Horseshoe-nails, Processes.

64. NAIL-MAKING, WROUGHT NAILS, HORSESHOE-NAILS. Machines for forging horseshoe-nails from heated rods or other forms of stock. The dies and other mechanisms are especially designed to form horseshoe-nails and are frequently constructed to simulate the peculiar drawing blow of a hand-hammer.

65. NAIL-MAKING, WROUGHT NAILS, HORSESHOE-NAILS, CHAIN-FEED. A type of machine in which the blanks are carried to the shaping mechanism by an endless carrier or sectional table mounted upon and driven by chains.

66. NAIL-MAKING, WROUGHT NAILS, HORSESHOE-NAILS, ROLL-FORGING. Machines in which the shaping of the nail is partly but not wholly effected by means of rolls, either plain or having dies upon their peripheries.

Search Class—

80—METAL-ROLLING, subclass 24, Die-Rolling, and subclasses thereunder for machines which complete the nail by rolling alone.

67. NAIL-MAKING, WROUGHT NAILS, HORSESHOE-NAILS, ROLL-FORGING, TRAVELING-ROLL. Horseshoe-nail-forming machines of the roll-forging type in which the forging-roll rotates on an axis which itself has a lateral movement, usually in a planetary path, so as to give a peculiar drawing blow upon the nail-blank, similar to the blow of a hand-hammer.

68. NAIL-MAKING, WROUGHT NAILS, HORSESHOE-NAILS, SIDE-SWAGE. Horseshoe-nail-forming machines in which the nail outlines are formed in part by laterally-moving dies which operate upon the sides of the head and shank of the nail.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 18, Bolt and rivet making, Side-swaging, and 79, Nut and washer making, Forging, Side-swage.

69. NAIL-MAKING, WROUGHT NAILS, HORSESHOE-NAILS, ROTARY WORK-HOLDER. Horseshoe-nail-forming machines in which the blanks are carried to the various forging devices by a rotatable table or carrier having a step-by-step movement.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 6, Screw-making, Head-nicking, Rotary work-holder; 13, Bolt and rivet making, Rotary multiple dies; 39, Nail-making, Cut nails, Horseshoe-nails, Finishing, Rotary work-holder; 52, Nail-making, Wire nails, Rotary work-holder; 60, Nail-making, Wrought nails, Spikes, Rotary work-holder, and 158, Capping nails and screws, Rotary work-holder.

70. NAIL-MAKING, WROUGHT NAILS, HORSESHOE-NAILS, DIES. Dies especially designed for forging horseshoe-nails.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 24, Bolt and rivet making, Dies; 53, Nail-making, Wire nails, Dies, and 61, Nail-making, Wrought nails, Spikes, Dies.

71. NAIL-MAKING, WROUGHT NAILS, HORSESHOE-NAILS, PROCESSES. Steps, and sets of steps, mechanical and otherwise, used in the manufacture of forged horseshoe-nails.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 10, Screw-making, Processes; 27, Bolt and rivet making, Processes; 54, Nail-making, Wire nails, Processes, and 63, Nail-making, Wrought nails, Spikes, Processes.

72. NUT AND WASHER MAKING. Miscellaneous machines and devices for making nuts and washers. In all cases the operations include something more than mere punching and cutting off of nut-blanks or washers. The manufacture of the two articles is not separated, as one machine may often make either by a mere change of dies.

Search Class—

164—CUTTING AND PUNCHING SHEETS AND BARS. Appropriate subclasses for machines for cold-punching nut-blanks and washers.

73. NUT AND WASHER MAKING, LOCK-WASHER MAKING. Machines for cutting, coiling, swaging, and otherwise shaping washers to be used as nut-locks. These machines perform more than the single operation of bending a bar to shape.

Search Class—

153—METAL-BENDING. Appropriate subclasses for machines for merely bending rods to various shapes to be used as nut-locks.

CLASS 10—Continued.

74. NUT AND WASHER MAKING, COILING AND FORGING. Machines for bending hot blanks by dies or otherwise and subsequently forging the coiled blank into nuts, which usually have a split at one side to adapt them for use as lock-nuts.
75. NUT AND WASHER MAKING, NUT FINISHING AND TAPPING. Machines for performing various operations upon rough nut-blanks, such as facing the top and bottom, milling the sides, and threading the hole of the blank. These are all combined machines performing more than one function.
76. NUT AND WASHER MAKING, FORGING. Machines and devices for forging nuts and washers, usually nuts, and from heated stock, though occasionally the article is shaped cold.
77. NUT AND WASHER MAKING, FORGING, ROTARY MULTIPLE DIES. Machines for forging nuts and washers, usually nuts, in which the blanks are carried to the various shaping mechanisms by a rotatable die-carrier having a step-by-step movement.
- Search Class—**
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 13, Bolt and rivet making, Rotary multiple dies.
78. NUT AND WASHER MAKING, FORGING, DOUBLE-PUNCH DRIVE. Machines for forging nuts and washers in which a pair of aligned forming and perforating punches acting point to point are driven by suitable mechanisms, usually coupled, at each end of the machine.
79. NUT AND WASHER MAKING, FORGING, SIDE-SWAGE. Machines in which the nuts are given a polygonal form by hammers or dies moving laterally and at right angles to the axis of the nut.
- Search Class—**
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 18, Bolt and rivet making, Side-swaging, and 68, Nail-making, Wrought nails, Horseshoe-nails, Side-swage.
80. NUT AND WASHER MAKING, FORGING, SIDE-SWAGE AND MANDEREL. Nut and washer forging machines in which the nut is held on a mandrel while being shaped by side-swaging dies or hammers.
81. NUT AND WASHER MAKING, NUT-BROACHING. Special machines for finishing the sides of rough-forged nuts by driving them through a broaching-die.
- Search Class—**
90—GEAR-CUTTING, MILLING, AND PLANING, subclass 33, Planing, Broaching, for machines for general broaching operations.
82. NUT AND WASHER MAKING, NUT-MILLING. Special machines for finishing the sides of rough nut-blanks by means of milling-cutters. The invention usually resides in the means for holding and feeding the nut-blanks.
- Search Class—**
90—GEAR-CUTTING, MILLING, AND PLANING, appropriate sub-classes for machines for general milling.
83. NUT AND WASHER MAKING, NUT-FACING. Special machines for facing the tops and bottoms of rough nut-blanks, usually by a turning operation.
- Note.**—The invention resides in the means for feeding and discharging the nuts, and for this reason the machines are excluded from class 82, TURNING, the broad class of turning.
84. NUT AND WASHER MAKING, NUT-FACING, ARBORS. Arbors or mandrels especially designed to hold nut-blanks while being faced. They usually have means for holding the blank in true axial alignment even when of unequal thickness on opposite sides.
- Search Class—**
82—TURNING, subclass 43, Work-drivers, Mandrels.
85. NUT AND WASHER MAKING, DIES. Dies for forging and finishing nuts and washers.
- Search Class—**
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 24, Bolt and rivet making, Dies, and 61, Nail-Making, Wrought nails, Spikes, Dies.
86. NUT AND WASHER MAKING, PROCESSES. Various steps and sets of steps applicable to the manufacture of nuts and washers. The steps are usually mechanical ones. No apparatus is included.
87. SCREW-THREADING, MACHINES, COMBINED. Machines in which means for cutting external screw threads are combined with some other mechanism, such as drilling or turning mechanism.
88. SCREW-THREADING, WOODEN SCREWS. Machines and devices for cutting threads, either external or internal, in wood, such as wooden bench-screws, and nuts therefor, bed-rails, etc.
89. SCREW-THREADING, MACHINES. Miscellaneous machines not otherwise classifiable for forming external screw-threads on articles by removing a portion of the metal by suitable cutters.
- Search Class—**
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 84, Nut and washer making, Nut-facing arbors.

CLASS 10—Continued.

90. SCREW-THREADING, MACHINES, CUTTING-OFF AND THREADING. Machines for threading articles, usually lengths of pipe, and having means for severing the articles in suitable lengths either simultaneously with the threading or separately.
- Search Class—**
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 110, Screw-threading, Implements, Dies, Combined Cutting-off and threading.
91. SCREW-THREADING, MACHINES, MULTIPLE-DIE. Machines having a plurality of dies or cutting heads for forming external threads.
- Search Class—**
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 114, Screw-threading, Implements, Dies, Multiple.
92. SCREW-THREADING, MACHINES, MULTIPLE-DIE, ALINED. Machines or devices comprising a plurality of threading-dies in axial alignment adapted to simultaneously cut threads on different portions of the length of such articles as steam-boiler stay-bolts, etc.
93. SCREW-THREADING, MACHINES, MULTIPLE-DIE, TURRET. Machines having a plurality of screw-threading dies arranged on the periphery of a rotatable turret.
94. SCREW-THREADING, MACHINES, COLLAPSING-DIE. Machines in which the die after cutting a thread is capable of opening or retracting the thread-cutting "chasers" from the work, so that work and die may be separated without unscrewing the thread just formed.
95. SCREW-THREADING, MACHINES, COLLAPSING-DIE, BEVEL-CLOSING. Collapsing-die machines in which the chasers are mounted on wedge-shaped pieces, diagonal slots, or the like in the die-head, so that moving the chaser-carrier in the axial direction relatively to the head also acts to withdraw the chasers radially and release the work.
- Search Class—**
29—METAL-WORKING, subclass Machine-chucks and tool-sockets, Bevel-closing, and 145, WOODWORKING-TOOLS, subclass 84, Handles, Socket-fastenings, Bevel-closing, and sub-classes thereunder, for similar structures for moving article-holding jaws.
96. SCREW-THREADING, MACHINES, COLLAPSING-DIE, CAM-CLOSING. Collapsing die machines in which the chasers are moved radially by means of cams, usually a concentric cam with a series of slots, one for operating each chaser.
- Search Classes—**
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 122, Screw-threading, Implements, Dies, Radial chaser, Adjustable, Cam-operated.
29—METALWORKING, subclass 124, Machine-chucks and tool-sockets, Cam-closing.
145—WOODWORKING-TOOLS, subclass 93, Handles, Socket-fastenings, Cam-closing.
97. SCREW-THREADING, MACHINES, COLLAPSING-DIE, LEVER-CLOSING. Collapsing-die machines in which the chasers are mounted upon levers capable of oscillating, so as to give the chaser a radial movement to release the work.
- Search Classes—**
29—METAL-WORKING, subclass 129, Machine-chucks and tool-sockets, Lever-closing.
145—WOODWORKING-TOOLS, subclass 98, Handles, socket-fastenings, Lever-closing.
98. SCREW-THREADING, MACHINES, COLLAPSING-DIE, LEVER-CLOSING, CONE. Collapsing-die machines in which the chaser-operating levers are actuated by the axial movement of a cone beneath the free ends of the levers.
- Search Class—**
29—METAL-WORKING, subclass 130, Machine-chucks and tool-sockets, Lever-closing, Cone, for similar structures for moving gripping-jaws.
99. SCREW-THREADING, MACHINES, COLLAPSING-DIE, LEVER-CLOSING, TOGGLE. Machines of the type shown in subclass 97, in which the levers are operated by or form part of a toggle-joint, which usually serves to lock the die-head in its closed position.
- Search Class—**
29—METAL-WORKING, subclass 131, Machine-chucks and tool-sockets, Lever-closing, Toggle.
100. SCREW-THREADING, MACHINES, COLLAPSING-DIE, PIVOTED CHASER-CARRIER. Collapsing-die machines in which the chasers are mounted either separately or in sets on carriers swinging on pivots which are parallel to the axis of the die-head.
- NOTE.**—These should be distinguished from devices in subclasses 97, 98, and 99, in which the levers are never pivoted on pivots parallel to the axis of the head.
101. SCREW-THREADING, MACHINES, CHASING-CUTTER. Screw-threading machines having, in lieu of a closed die-head with a plurality of circumferentially-arranged chasers, only a single chasing-cutter with one or more V-points for producing the thread. The machines are usually used for threading wood-screws.

CLASS 10—Continued.

102. **SCREW-THREADING, MACHINES, CHASING-CUTTER, ROTARY.** Machines in which the chaser is cylindrical in outline, having cutting-teeth of the same circular pitch as that of the thread to be cut and mounted on an axis at right angles to the axis of the work, so that it may have a rolling motion along the work as the two are moved relatively to each other in the direction of the axis of the work.

103. **SCREW-THREADING, MACHINES, RECESSED CYLINDRICAL DIE-BLOCK.** Machines or machine die-heads in which the chasers are short cylinders or their equivalent having an external thread, the cutting edge of the chaser being formed by removing a portion of the cylinder on lines parallel to its axis.

Search Class—

82—TURNING, subclass 13, Axial pattern, Profiled cutter.

104. **SCREW-THREADING, MACHINES, SCREW CHASER-ADJUSTMENT.** Machines and machine die-heads in which the chasers are adjusted radially for wear or different-sized work by means of backing screws or other radially-arranged screws bearing upon or connected to the chasers.

105. **SCREW-THREADING, MACHINES, FEEDS.** Devices for effecting axial movement between the die-head and work in screw-threading machines to relieve the thread and dies from the strain resulting from self-feeding.

106. **SCREW-THREADING, MACHINES, LUBRICATORS.** Devices for supplying lubricants to the dies of screw-cutting machines.

107. **SCREW-THREADING, MACHINES, WORK-HOLDERS.** Devices for supporting and rotating or preventing the rotation of work while being screw-threaded.

108. **SCREW-THREADING, MACHINES, WORK-HOLDERS, NIPPLE-CHUCKS.** Devices for securely holding short pieces of pipe while being screw-threaded throughout the whole or the greater part of their length.

Search Class—

23—METAL-WORKING, subclasses of Machine-chucks and tool-sockets for devices analogous to those nipple-chucks which have movable jaws.

109. **SCREW - THREADING, IMPLEMENTS, COMBINED TURNING AND THREADING.** Portable devices for turning worn parts and rethreading them or continuing the old thread. They are for the most part devices for dressing and rethreading worn wagon-axes.

Search Class—

82—TURNING, subclass 4, Lathes, Portable, for implements of the same general structure which turn only.

110. **SCREW-THREADING, IMPLEMENTS, DIES, COMBINED CUTTING-OFF AND THREADING.** Dies—that is, portable hand-operated screw-threading devices—having radially-moving tools adapted to cut to length the pipe or other article threaded. These cutters usually act separately from the dies.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 90, Screw-threading, Machines, Cutting-off and threading.

111. **SCREW-THREADING, IMPLEMENTS, DIES.** Miscellaneous screw-threading implements consisting usually of a chaser-holding head with operating-handles and a work-guide. The term "die" is used in the ordinary trade sense. The dies shape by cutting instead of pressure, as in the case of the other subclasses of dies in this class.

112. **SCREW-THREADING, IMPLEMENTS, DIES, PIPE-TRIMMING.** Dies for threading pipe which are provided with means for removing the scale from the pipe and reducing it to size and true circular outline.

Search Class—

77—BORING AND DRILLING, subclass 73, Reamers, Pipe-bur, for devices for removing the interior bur left in the pipe by roller cutters and in some cases squaring the end of the pipe.

113. **SCREW-THREADING, IMPLEMENTS, DIES, THREAD-TRIMMING.** Screw-threading dies having means for removing a portion of the thread already formed, so as to leave the tip of the bolt or pipe unthreaded for a short distance.

114. **SCREW-THREADING, IMPLEMENTS, DIES, MULTIPLE.** Implements having several dies of different size or pitch mounted in the same holder to obviate the frequent changing of dies in the same stock.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 91, Screw-threading, Machines, Multiple-die.

115. **SCREW-THREADING, IMPLEMENTS, DIES, MULTIPLE, ROTATABLE DIE-BLOCK.** Multiple dies in which a pair or set of cylindrical or polygonal blocks mounted on parallel pivots have part dies of similar size and pitch cut in corresponding sides of the blocks, so that a complete working die may be formed by turning together similar part dies and locking the rotatable blocks in that position.

116. **SCREW-THREADING, IMPLEMENTS, DIES, DIVIDED.** Dies composed of separate parts mounted in a retaining-ring, box, or other holder and usually capable of adjustment therein.

CLASS 10—Continued.

117. **SCREW-THREADING, IMPLEMENTS, DIES, DIVIDED, CONED-SCREW ADJUSTMENT.** Divided dies mounted in retaining rings or holders and adjustable therein by means of cone-pointed or cone-headed screws.

118. **SCREW-THREADING, IMPLEMENTS, DIES, INTEGRAL.** Dies formed of a single piece of metal, which may or may not be slotted at one side to permit adjustment within the limits of the resiliency of the metal.

119. **SCREW-THREADING, IMPLEMENTS, DIES, INTEGRAL, ADJUSTMENTS.** Integral dies having slots at one or more points of their circumference and means for giving the die a limited adjustment by springing the metal of the die.

120. **SCREW-THREADING, IMPLEMENTS, DIES, RADIAL-CHASER.** Dies in which the immediate thread-cutting portions are bar-like chasers toothed at their inner ends and arranged substantially radially in the die-head or holder.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 104, Screw-threading, Machines, Screw chaser-adjustment.

121. **SCREW-THREADING, IMPLEMENTS, DIES, RADIAL-CHASER, ADJUSTABLE.** Dies in which the chasers are radially adjustable for wear for different sizes of work or to release the work when finished.

122. **SCREW-THREADING, IMPLEMENTS, DIES, RADIAL-CHASER, ADJUSTABLE, CAM-OPERATED.** Dies in which the radial movement or adjustment of the chaser is effected by means of a cam having slots to engage each chaser.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 96, Screw-Threading, Machines, Collapsing-die, Cam-closing.

123. **SCREW-THREADING, IMPLEMENTS, DIE-STOCKS.** Devices comprising a die-holder and handles for rotating the same, together with other mechanism for guiding the article to be threaded, lubricating the chasers, etc.

124. **SCREW-THREADING, IMPLEMENTS, DIE-STOCKS, RATCHET.** Devices for holding and rotating screw-threading dies, including a ratchet mechanism between the die and driving-handles, so that the die may be given a complete rotation by an oscillating motion of the handles.

125. **SCREW-THREADING, IMPLEMENTS, DIE-STOCKS, HINGED.** Die-stocks provided with a hinge at one side of the die-frame and locking means at the other side, so that the stock may be readily opened to change dies.

126. **SCREW-THREADING, IMPLEMENTS, DIE-STOCKS, OILERS.** Stocks having oil-reservoirs, usually in the handles, and mechanism for supplying the oil to the cutting ends of the chasers.

127. **SCREW-THREADING, IMPLEMENTS, DIE-STOCKS, BUSHINGS.** Interchangeable collars or their equivalents attached to the die-stock in axial alignment with the die to surround the work and steady the stock thereon while the thread is being cut.

128. **SCREW-THREADING, TAPPING, MACHINES, COMBINED REAMING AND TAPPING.** Machines, usually for finishing pipe-fittings, which first ream and then tap or interiorly thread the rough connection. The fittings are often held in a rotatable holder.

129. **SCREW - THREADING, TAPPING, MACHINES.** Machines not otherwise classifiable for cutting interior screw-threads.

130. **SCREW-THREADING, TAPPING, MACHINES, MULTIPLE TAP-SPINDLE.** Machines for cutting interior screw-threads having a plurality of tap-driving spindles.

Search Class—

77—BORING AND DRILLING, subclasses under Drilling-machines, Multiple-spindle.

131. **SCREW-THREADING, TAPPING, MACHINES, MULTIPLE TAP-SPINDLE, TEE-THREADING.** Multiple-spindle tapping-machines especially designed to tap the three-way pipe-fittings usually called "tees."

132. **SCREW-THREADING, TAPPING, MACHINES, MULTIPLE TAP-SPINDLE, CIRCULAR-GANG.** Multiple-spindle tapping-machines in which the spindles are arranged in a circular series, either parallel to each other or radially placed in a single plane.

Search Class—

77—BORING AND DRILLING, subclasses 23, Drilling-machines, Multiple-spindle, Parallel axes, Circular-gang, and 26, Drilling-machines, Multiple-spindle, Radial axes.

133. **SCREW-THREADING, TAPPING, MACHINES, DOUBLE TAP-GRIP.** Screw-tapping machines in which a relatively long-shanked tap is gripped by jaws at two points of its length, one set of jaws serving to hold and drive the tap, while the other set is open to allow nut-blanks to be fed along the tap. The machines are thus made continuous in their action, the blanks being fed upon one end of the tap and the finished nuts discharged from the other end.

CLASS 10—Continued.

134. **SCREW-THREADING, TAPPING, MACHINES, RELEASABLE-TAP.** Screw-tapping machines having means for quickly releasing a long-shanked tap from its driving means, so that the tapped nuts may be readily discharged therefrom and the tap again coupled to the driver.
135. **SCREW-THREADING, TAPPING, MACHINES, YIELDING TAP-DRIVER.** Machines and devices driving the tap by frictional or other clutches adjusted to yield as soon as the tap "bottoms" or meets with any obstruction which would injure it if rotated further.
136. **SCREW-THREADING, TAPPING, MACHINES, REVERSING MECHANISMS.** Devices for changing the direction of rotation of the tap-spindle after the work is completed to withdraw the tap.
137. **SCREW-THREADING, TAPPING, MACHINES, REVERSING MECHANISMS, BEVEL-GEARED.** Tap-reversing mechanisms comprising a pair of oppositely-rotated bevel-gears mounted on the same axis, connected by a third bevel-gear, and capable of being separately clutched to the driven shaft to reverse its direction of rotation.
138. **SCREW-THREADING, TAPPING, MACHINES, REVERSING MECHANISMS, SPUR-GEARED.** Tap reversing mechanisms comprising a train of spur-gears into which an idler may be introduced to change the direction of rotation of the driven gear and the spindle to which it is attached.
139. **SCREW-THREADING, TAPPING, MACHINES, FEEDS.** Devices for automatically feeding nuts, etc., to tapping-spindles or for advancing the spindle itself to the work to be tapped.
140. **SCREW-THREADING, TAPPING, IMPLEMENTS, TAPS, COMBINED.** Devices comprising a screw-cutting tap and a reamer, drill facing-tool, or similar cutter.
(Note.—All combined cutters which include a tap as an element will be found in this class, except such as are incidentally shown, unclaimed, in subclass 12, Drilling-machines, Portable, Clamped, Drilling and tapping, and subclass 37, Tapping-mains, and subclasses thereunder, in class 77, BORING AND DRILLING.)
- Search Class—**
77—BORING AND DRILLING subclass 65, Drills, Combined, for devices combining drills, reamers, countersinks, and similar tools for making unthreaded holes.
141. **SCREW-THREADING, TAPPING, IMPLEMENTS, TAPS.** Devices not otherwise classifiable for cutting interior screw-threads.
142. **SCREW-THREADING, TAPPING, IMPLEMENTS, TAPS, ADJUSTABLE.** Taps in which the immediate thread-cutting portions are capable of radial adjustment, but are not adapted to be rapidly retracted, so as to be withdrawn from the thread without unscrewing.
143. **SCREW-THREADING, TAPPING, IMPLEMENTS, TAPS, COLLAPSIBLE.** Devices in which the thread-cutting portions may be readily retracted toward the axis of the tap to permit its withdrawal from the tapped hole without unscrewing.
144. **SCREW-THREADING, TAPPING, IMPLEMENTS, TAPS, COLLAPSIBLE, CAM-CORE.** Collapsible taps in which the cutters are protruded and retracted by rotating a cam-surfaced piece axially or concentrically mounted.
145. **SCREW-THREADING, TAPPING, IMPLEMENTS, TAPS, COLLAPSIBLE, WEDGE-CORE.** Collapsible taps in which the cutters are protruded and retracted by the axial movement of a conical or wedge shaped core or center piece.
146. **SCREW-THREADING, TAPPING, IMPLEMENTS, TAPS, BUILT-UP.** Taps without any provision for adjustment of the cutting portions, but made up of several pieces rigidly secured together instead of a single piece of metal.
147. **SCREW-THREADING, TAPPING, IMPLEMENTS, TAPS, GUIDES.** Various devices for holding taps in exact alignment with the hole or series of aligned holes to be tapped or to start a tap exactly at right angles to the surface pierced.
148. **SCREW-THREADING, TAPPING, IMPLEMENTS, TAP-WRENCHES.** Devices especially designed for holding and rotating screw-threading taps in the same manner that dies are rotated by a die-stock.
- Search Classes—**
81—TOOLS, subclasses of Wrenches.
145—WOODWORKING TOOLS, subclass 65, Handles, Cross bar.
149. **SCREW-THREADING, TAPPING, IMPLEMENTS, TAP-WRENCHES, AXIAL-SCREW CLAMP.** Tap-wrenches in which the tap-clamping means are screws arranged in the direction of the length of the wrench, being frequently the threaded ends of the wrench-handles themselves.
150. **SCREW-THREADING, TAPPING, IMPLEMENTS, TAP-WRENCHES, RATCHET.** Tap-driving devices including a pawl-and-ratchet mechanism between the tap-holder and the wrench-handles.

CLASS 10—Continued.

Search Classes—

- 10—Subclass 124, Screw threading, Implements, Die stocks, Ratchet.
- 74—MACHINE ELEMENTS, subclass 16, Pawls and Ratchets.
- 77—BORING AND DRILLING, subclass 10, Drilling Machines, Portable, Rail-drills, Ratchet; subclasses 43 to 47, Ratchet drills.
- 145—WOODWORKING TOOLS, subclasses 70, Bit stocks, Ratchet; 75, Handles, Ratchet and Pawl; 76, Handles, Ratchet clutch; and 77, Handles, Cross bar, Ratchet.
151. **SCREW-THREADING, TAPPING, IMPLEMENTS, TAP-WRENCHES, TRANSVERSE-SCREW CLAMP.** Tap-wrenches in which the tap-shank is gripped by screws arranged transversely of the frame of the wrench or by jaws operated by similarly-placed screws.
152. **SCREW-THREADING, SWAGING.** Machines, dies, and devices for making screw-threads by displacing the metal between the threads by pressure and crowding it, usually without heating, into the thread itself.
- Search Class—**
80—METAL-ROLLING, Screw-Threads, and subclasses thereunder for swaging screw-threads by reciprocating platens, which rotate the blank between them, or swaging by rolls.
153. **SCREW-THREADING, SWAGING, RECIPROCATING-DIE.** Screw-swaging machines and devices including parted dies interiorly threaded, so as to form a mating-thread on the work-piece when said dies are reciprocated in a direction at right angles to the axis of the work.
154. **SCREW-THREADING, THREAD-MILLING.** Special machines for cutting screw-threads by means of V-shaped rotary cutters.
- Search Class—**
90—GEAR-CUTTING, MILLING AND PLANING, subclasses 11 to 22 under Milling for general milling.
155. **BOLT AND NUT ASSEMBLING.** Special machines for screwing together finished bolts and nuts. They are frequently automatic, the separate articles being fed from hoppers to the assembling mechanism.
156. **CAPPING NAILS AND SCREWS.** Special machines for providing nails and screws with ornamental sheet-metal caps or with heads larger than can be readily swaged from the stock used for the shank. A few machines for making core-supporting chaplets are included.
157. **CAPPING NAILS AND SCREWS, RECTANGULAR STOCK-FEED.** Nail and screw capping machines in which the stock for the shanks is fed longitudinally into the machine, the ribbon or plate of stock for the heads being meanwhile fed in laterally and intersecting the line of feed of the shank-stock at right angles, the forming and joining mechanism being located at this point of intersection.
158. **CAPPING NAILS AND SCREWS, ROTARY WORK HOLDER.** Nail and screw capping machines in which the articles are held and carried to the capping mechanisms by a rotatable work-holder having a step-by-step movement.
- Search Class—**
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 6, Screw-making. Head-nicking, Rotary work-holder; 39, Nail-making, Cut nails, Horseshoe-nails, Finishing, Rotary work-holder; 60, Nail-making, Wrought nails, Spikes, Rotary work-holder, and 69, Nail-making, Wrought nails, Horseshoe-nails, Rotary work-holder.
159. **CAPPING NAILS AND SCREWS, NICKING DEVICES.** Devices for cutting through the sheet-metal screw-head covering a nick to correspond with the nick or slot in the screw-head.
- Search Class—**
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 5 to 7 under Screw-making, Head-nicking.
160. **CAPPING NAILS AND SCREWS, DIES.** Dies especially adapted for forming and closing nail and screw caps about the heads of the articles.
161. **CAPPING NAILS AND SCREWS, PROCESSES.** Steps and sets of steps, including mechanical processes but excluding apparatus, for affixing caps to nail and screw heads.
162. **DISTRIBUTERS AND FEEDERS.** Miscellaneous machines for feeding nail, screw, and nut blanks and nail plates or stock to machines for performing various steps in the manufacture of those articles, for separating finished articles from imperfect work and chips, and for conveying articles from machines to receptacles for packing, etc.
163. **DISTRIBUTERS AND FEEDERS, AGITATED-CHUTE.** Feeders in which the articles are arranged or forwarded by inclined chutes which are jolted or shaken by suitable mechanism.
164. **DISTRIBUTERS AND FEEDERS, AGITATED-HOPPER.** Feeders in which the articles are arranged and fed from hoppers which are tilted, jarred, or rocked to move the blanks contained.
165. **DISTRIBUTERS AND FEEDERS, INCLINED-CHUTE.** Feeders or assorters in which the articles are arranged or assorted by sliding down sharply-inclined chutes usually having slots in their bottoms through which the articles hang supported by their heads.

CLASS 10—Continued.

166. **DISTRIBUTERS AND FEEDERS, GRIPPING FEEDING-JAWS.** Feeders in which the articles are conveyed one by one to the shaping mechanisms by means of jaws which grip them singly and carry them from a receptacle to the point desired.
167. **DISTRIBUTERS AND FEEDERS, RECIPROCATING-LIFTER.** Feeders in which the articles are elevated from a mass a few at a time by means of a lifter which reciprocates vertically within the hopper, usually through a slot in its bottom. The articles are generally discharged from the lifter into an inclined conveyer.
168. **DISTRIBUTERS AND FEEDERS, ROTARY-CYLINDER.** Distributors and assorters in which the articles are agitated in slotted cylinders often having inclined axes and usually so constructed that the width of the slots may be varied.
169. **DISTRIBUTERS AND FEEDERS, ROTARY-DISK.** Feeders in which the articles are received in recesses in the peripheries of rotatable disks and carried thereby to the point to be operated upon.
170. **DISTRIBUTERS AND FEEDERS, ROTARY-HOPPER.** Feeders in which the articles are deposited promiscuously in a rotating hopper from which they are taken by forked lifters or escape by chutes adjacent to openings in the bottom of the hopper.
171. **DISTRIBUTERS AND FEEDERS, NAIL-PLATE.** Miscellaneous devices for feeding nail-plates to cutting-machines. The plates may be fed direct, oscillated to produce tapering nail-blanks, or may be turned completely over after each cut.

CLASS 10—Continued.

172. **DISTRIBUTERS AND FEEDERS, NAIL-PLATE, OSCILLATING.** Devices which swing the nail-plate from side to side as it is fed forward, so that the nail-blanks are cut tapering, the head end lying first at one side and then the other of the plate.
173. **DISTRIBUTERS AND FEEDERS, NAIL-PLATE, REVERSING.** Nail-plate feeders which turn the plate over after each nail is cut therefrom.
174. **DISTRIBUTERS AND FEEDERS, NAIL-PLATE, REVERSING, GEARED.** Nail-plate feeders in which the plate-holding mechanism is reversed or turned through a half-circle by means of a train of gearing.
175. **DISTRIBUTERS AND FEEDERS, NAIL-PLATE, REVERSING, GEARED, RACK-AND-PINION.** Nail-plate feeders in which the plate-holder is reversed by means of a concentrically-attached pinion, with which meshes a reciprocating rack.
176. **DISTRIBUTERS AND FEEDERS, NAIL-PLATE, REVERSING, GEARED, SEGMENTAL.** Nail-plate feeders in which the plate-holder is reversed by an attached pinion, with which meshes an oscillating segmental gear, or by a gear-train, containing at some point a segmental gear.
177. **DISTRIBUTERS AND FEEDERS, NAIL-PLATE, REVERSING, STRAP-DRIVE.** Nail-plate feeders in which the plate-holder is reversed by means of straps of metal or leather wound upon the barrel from opposite sides and mechanism for pulling the straps alternately in opposite directions.
178. **DISTRIBUTERS AND FEEDERS, NAIL-PLATE, NIPPERS AND NOSE-PIECES.** Devices including the immediate gripping portion of the nail-plate holder and that part of the barrel nearest the nail-cutting shears.

CLASS 12.—BOOT AND SHOE MAKING.

DEFINITIONS.

Class.

This class includes instruments specially adapted for making boots and shoes which are not classified elsewhere, and processes of making boots and shoes, except such as by their steps merely define the structure of the article, such processes being found in class 31, **BOOTS, SHOES, AND LEGGINGS**, with the articles to which they relate.

Molding apparatus and processes for the manufacture of rubber boots and shoes are found in class 18, **PLASTICS**.

Machines for die-cutting shoe blanks or parts are found in class 164, **CUTTING AND PUNCHING SHEETS AND BARS**.

Subclasses.

1. **MISCELLANEOUS.** Boot and shoe apparatus which do not fall in the more specific subclasses of this class.
2. **LASTING AND NAILING MACHINES.** Machines which stretch the upper over the last and secure it by nailing.
3. **LASTING AND NAILING MACHINES, HAND-GUIDED DRIVERS.** Combined lasting and nailing machines in which the nailing device is moved and guided to the proper position by hand.
4. **LASTING AND NAILING MACHINES, MULTIPLE DRIVERS.** Combined lasting and nailing machines provided with multiple drivers.
5. **LASTING AND NAILING MACHINES, PIVOTED-JACK.** Combined lasting and nailing machines in which the nailing device is stationary and the last is carried on a pivoted jack which is moved under the nailing device.
6. **LASTING AND SEWING MACHINES.** Machines which stretch the upper over the last and secure it by sewing.
7. **LASTING-MACHINES.** Miscellaneous machines used in or in connection with the lasting operation—*i. e.*, in stretching and pulling the upper over the last to fit it thereto prior to securing it to the sole.
8. **LASTING-MACHINES, GIRTH-STRETCHERS.** That type of lasting-machines in which the upper is stretched by drawing around it one or more straps or girths, which may be elastic.
9. **LASTING-MACHINES, NIPPER-STRETCHERS.** That type of machine in which nippers grasp the upper and pull it over the last.
Search Class—
12—**BOOT AND SHOE MAKING**, subclass 2, Lasting and nailing machines, and all types thereunder.
10. **LASTING-MACHINES, NIPPER-STRETCHER, WIPER-FOLDER.** Nipper-stretcher machines in which the edges of the upper are folded over the edge of the last by fingers or wipers.
11. **LASTING-MACHINES, NIPPER-STRETCHER, WIPER-FOLDER, MULTIPLE WORK-SUPPORTS.** Nipper-stretcher wiper-folder machines in which a plurality of work-supports are mounted on a common carrier or table, the work-holder or the lasting mechanism, generally being revolvable to bring the lasting mechanism in position to cooperate with first one and then another of the work-supports.
- 11.1. **LASTING MACHINES, NIPPER STRETCHER, NIPPERS.** Includes only nippers employed in lasting machines of the nipper-stretcher type.
Search Class—
12—**BOOT AND SHOE MAKING**, subclasses 108, Lasting tools, Nailing and stretching, and 110, Lasting tools, Stretchers, and the subclasses thereunder.
12. **LASTING-MACHINES, WIPER-STRETCHER.** That type of machine in which the only stretching means are wipers, which rub or carry the upper into shape by frictional contact.
Search Class—
12—**BOOT AND SHOE MAKING**, subclass 10, Lasting-machines, Nipper-stretcher, Wiper-folder.
13. **LASTING-MACHINES, WIPER-STRETCHER, PRONGED.** That type of wiper-stretcher machine in which the wiper is provided with prongs or spurs which pierce the upper to assist in stretching.
14. **LASTING-MACHINES, END-LASTING.** Lasting-machines in which the whole novelty lies in the mechanism for lasting the shoe at the heel or toe, or both.
Search Class—
12—**BOOT AND SHOE MAKING**, subclasses 10, Lasting-machines, Nipper-stretcher, Wiper-folder, and 12, Lasting-machines, Wiper-stretcher.
- 14.1. **LASTING MACHINES, END LASTING, END CLASPS.** Includes the toe and heel clasps used in end lasting.

CLASS 12—Continued.

15. **LASTING-MACHINES, RELASTING.** Devices for forcing a last into a completed or partly-completed boot or shoe.
16. **LASTING-MACHINES, TACK-PULLERS.** Machines for pulling out the lasting-tacks used for temporarily securing the upper to the sole or insole.
17. **SOLE-MACHINES.** Miscellaneous machines used in the production of soles and insoles and for operating on the sole after attachment to the upper.
18. **SOLE-MACHINES, CHANNELING AND TRIMMING.** Machines which channel and trim soles at the same operation.
Search Class—
12—**BOOT AND SHOE MAKING**, subclass 27, Sole-machines, Channeling, for machines which channel and bevel the sole.
19. **SOLE-MACHINES, CHANNELING AND TRIMMING, CLAMPED-WORK.** Combined channeling and trimming machines in which the work is clamped to present the work of the cutters.
20. **SOLE-MACHINES, INSOLE-REINFORCING.** Machines for applying a reinforcing-sheet to insole-blanks. The reinforcing sheet is usually woven fabric and is cemented to the sole, the machine laying it over the molded rib and in the channel and trimming off the surplus.
21. **SOLE-MACHINES, BLANK-MOLDING.** Machines for shaping sole-blanks by pressure prior to their attachment to the upper.
22. **SOLE-MACHINES, BLANK-MOLDING, EDGE.** Machines for upsetting, flanging, and otherwise shaping sole edges by pressure, usually by passing the sole edge between rolls.
Search Class—
12—**BOOT AND SHOE MAKING**, subclass 30, Sole-machines, Channel-flap turners for machines for turning up and setting channel flaps.
23. **SOLE-MACHINES, BLANK-ROUNDING.** Machines for cutting out or rough-shaping sole-blanks, except die-cutting machines, which are found in class 164, **CUTTING AND PUNCHING SHEETS AND BARS**.
Search Class—
12—**BOOT AND SHOE MAKING**, subclasses 18, Sole-machines, Channeling and trimming, and 20, Sole-machines, Insole-reinforcing.
24. **SOLE-MACHINES, BLANK-ROUNDING, STRIP-FEED.** Machines with mechanism for feeding a stock-strip into the machine and rounding a blank therefrom.
25. **SOLE-MACHINES, BLANK-ROUNDING, CLAMPED-WORK.** The work is clamped to a support which is fixed or is constrained to move in a predetermined path.
Search Class—
12—**BOOT AND SHOE MAKING**, subclasses 24, Sole-machines, Blank-rounding, Strip-feed, and 19, Sole-machines, Channeling and trimming, Clamped-work.
26. **SOLE-MACHINES, BLANK-ROUNDING, CLAMPED-WORK, ROTARY WORK AND CUTTER.** The work is held between clamping-plates having the general outline of a sole, which revolve to present the work to a rotary cutter.
27. **SOLE-MACHINES, CHANNELING.** Machines for cutting channels in soles and machines which in addition thereto also bevel the edges of soles.
28. **SOLE-MACHINES, CHANNELING, CLAMPED-WORK.** Channeling-machines in which the work is clamped to a work-support to present it to the channeling-cutters.
29. **SOLE-MACHINES, CHANNEL-FLAP LAYERS.** Machines especially adapted to lay and smooth down channel-flaps after the thread is laid in the channel.
30. **SOLE-MACHINES, CHANNEL-FLAP TURNERS.** Machines for opening channels and turning and setting the channel-flap in a raised position to prepare the sole for attachment to the upper.
Note.—Similar devices are found in class 112, **SEWING-MACHINES**, subclass 20, Sewing shoes.
31. **SOLE-MACHINES, EDGE-INKING.** Machines for inking sole edges in the finishing of boots and shoes.
Search Classes—
12—**BOOT AND SHOE MAKING**, subclass 70, Burnishing-machines, and 80, Cement-applying devices; 15, **BRUSHING AND SCRUBBING**, in the subclasses under Fountain-brushes; and 91, **COATING**, appropriate subclasses.
32. **SOLE-MACHINES, IMITATION-STITCH.** Machines for embossing or imprinting imitation stitches on soles.

CLASS 12—Continued.

33. **SOLE-MACHINES, LAYING AND LEVELING.** Machines for pressing cemented soles to lasted uppers and machines for hammering and pressing shoe-bottoms after the sole has been secured to the upper. Also some devices for positioning the soles preparatory to securing them.
34. **SOLE-MACHINES, LAYING AND LEVELING, ROLL.** The shoe is supported by a jack and is subjected to the pressure of a roller, the roll or jack, or both, being reciprocated to present the whole shoe-bottom to the roll.
35. **SOLE-MACHINES, LAYING AND LEVELING, OSCILLATING JACK AND FORMER.** The jack and former are pivotally mounted on parallel axes about which they oscillate, engaging as do coacting gear-wheels.
36. **SOLE-MACHINES, LAYING AND LEVELING, MULTIPLE WORK-SUPPORTS.** The machines are provided with a plurality of work-supports, so that one or more shoes will be in engagement with the press while the operator is changing the shoe on the remaining jack.
37. **SOLE-MACHINES, LAYING AND LEVELING, MULTIPLE WORK-SUPPORTS, REVOLUBLE.** A plurality of work-supports are mounted on a carrier which rotates about an axis to change the position of the work.
38. **SOLE-MACHINES, LAYING AND LEVELING, DIES AND FORMERS.** Inventions in which the novelty lies in the construction of the die or former which engages with the sole to lay and level the same.
Search Class—
12—BOOT AND SHOE MAKING, subclass 33, Sole-machines, Laying and leveling.
39. **SOLE-MACHINES, LINING-APPLIERS.** Devices for applying insole-linings or false insoles to the inner side of lasted shoe-bottoms.
Search Class—
12—BOOT AND SHOE MAKING, subclass 141, Lasts, Shoe-retainers.
40. **SOLE-MACHINES, SLITTING AND GROOVING.** Machines for slitting and grooving soles and insoles, usually to make them more flexible.
41. **SOLE-MACHINES, STITCH-SEPARATING AND INDENTING.** Machines which separate and shape the stitches and indent the welt between the stitches of welted shoes.
42. **HEEL-MACHINES.** Miscellaneous machines used in the manufacture of boot and shoe heels.
43. **HEEL-MACHINES, BREASTING AND NAILING.** Combined machines which nail heels to shoes and then breast them.
44. **HEEL-MACHINES, DIE-CUTTING AND NAILING.** Machines which die-cut heel-lifts and nail them together, some machines being supplied with paste-applying mechanism.
45. **HEEL-MACHINES, TRIMMING AND NAILING.** Combined machines which nail heels to shoes and then trim them.
46. **HEEL-MACHINES, BEVEL AND SEAT CUTTING.** Machines which bevel the breast edge of heel-lifts, usually to form the inside lift of a spring-heel shoe, or which gouge or otherwise cut out or concave the heel-seat.
47. **HEEL-MACHINES, BREASTING.** Machines which trim the front edge or "breast" of the heel.
Search Class—
12—BOOT AND SHOE MAKING, subclass 43, Heel-machines, Breastng and nailing.
48. **HEEL-MACHINES, MOLDING.** Machines for shaping heel-blanks by pressure, usually by direct press action. A few machines for molding the shell about the core of a core and shell heel.
Search Class—
1—NAILING AND STAPLING, subclass 33, Machines, Shoe, Heel pressing and loading.
49. **HEEL-MACHINES, BEADING.** Machines which bead or mill parts of heels.
50. **HEEL-MACHINES, ASSEMBLING.** Frames or forms on or in which heel-lifts are assembled and held preparatory to said heel-lifts being nailed or compressed.
51. **UPPER-MACHINES.** Machines specially adapted for use in the making of boot and shoe uppers and not more specifically classified elsewhere.
52. **UPPER-MACHINES, ASSEMBLING.** Forms and clamping devices for assembling the various parts of uppers.
53. **UPPER-MACHINES, BEADING.** Machines which turn the lined upper to bring the right side out and smooth and push out the seam, especially in scalloped button-flies, and which hammer or flatten the turned seam, and machines which do both.
54. **UPPER-MACHINES, EDGE-NOTCHING.** Machines for cutting gashes or notches in the edges of uppers which are to be folded.

CLASS 12—Continued.

55. **UPPER-MACHINES, FOLDING.** Machines for folding the edges of uppers.
Search Class—
12—BOOT AND SHOE MAKING, subclasses 54, Upper-machines, Edge-notching, and 52, Upper-machines, Assembling.
56. **UPPER-MACHINES, MARKING.** Machines for marking upper-blanks to locate seams and the like.
Search Class—
12—BOOT AND SHOE MAKING, subclass 51, Upper-machines.
57. **UPPER-MACHINES, TURNING.** Machines for turning boot and shoe uppers right side out. Includes a few inventions for turning "turned" shoes right side out.
58. **UPPER-MACHINES, SKIVING.** Machines specially adapted for skiving or splitting uppers.
59. **UPPER-MACHINES, STRAP-COVERING.** Machines for covering boot-straps with paper or other material to prevent soiling of the strap in the manufacture of the boot or shoe.
60. **SHANK-MACHINES.** Miscellaneous machines for making shanks, principally molding-machines and cutting-machines. The cutting-machines are usually arranged to bevel the edges of the shank.
61. **TOE AND HEEL STIFFENER MACHINES.** Machines, generally cutting or molding machines, peculiarly adapted to the manufacture of heel or counter stiffeners, box-toes, or toe-tips.
62. **TOE AND HEEL STIFFENER MACHINES, SKIVING.** Machines for skiving or beveling the edges of toe or heel stiffener blanks.
63. **TOE AND HEEL STIFFENER MACHINES, SKIVING, RECESSED-CARRIER.** The toe and heel stiffener blanks are presented to the skiving-knife by a recessed carrier, into which the blanks are pressed, or by recessed feed-rolls, the depth of the depression in the carrier or roll determining the thickness of the skived blank.
64. **TOE AND HEEL STIFFENER MACHINES, MOLDING.** Machines for shaping toe and heel stiffener blanks by pressure.
65. **TOE AND HEEL STIFFENER MACHINES, MOLDING, ROLL.** The toe or heel stiffener blank is molded by being forced between rolls or between a roll and a fixed form, the roll being rotated to feed the blank through.
66. **TOE AND HEEL STIFFENER MACHINES, MOLDING, SEPARABLE-MATRIX.** The matrix or form into which the counter is forced is made in sections, which separate to allow the insertion or withdrawal of the stiffener-carrying plunger or former.
67. **WELT AND RAND MACHINES.** Miscellaneous machines for preparing and operating on welts and rands.
- 67.1. **WELT AND RAND MACHINES, WELT AND RAND FORMERS.** Machines for crimping or molding welts and rands.
- 67.2. **WELT AND RAND MACHINES, WELT BEATERS.** Machines for beating out the welt after attachment to the upper and insole.
68. **BOOT-TREEING MACHINES.** Machines for smoothing and finishing the surface of the uppers of completed shoes by a rubbing action, the boots and shoes being mounted on boot-trees. These machines are usually supplied with tree-holders which can be shifted to present the shoe to the finishing-tools in the various positions required.
69. **BOOT-TREE HOLDERS.** Jacks or supporting-frames on which boot-trees are mounted while the treeing operation is performed. They are usually adjustable, so that the position of the boot or shoe can be varied as desired and provided with mechanism for expanding the tree. Some holders are provided with driers.
Search Class—
12—BOOT AND SHOE MAKING, subclass 68, Boot-treeing machines.
70. **BURNISHING-MACHINES.** Machines which polish and condense the surface of boots and shoes, particularly the sole and heel surfaces, through the rubbing action of a rigid metallic tool, which is usually heated.
Search Classes—
12—BOOT AND SHOE MAKING, subclasses under subclass 85, Sole and heel edge trimmers for analogous structures.
15—BRUSHING AND SCRUBBING for boot-blackening machines.
51—GRINDING AND POLISHING, for machines for abrading boots and shoes.
71. **BURNISHING-MACHINES, HEEL.** Machines especially adapted for burnishing the heels only of boots and shoes.
72. **BURNISHING-MACHINES, HEEL, OSCILLATING-JACK.** Heel-burnishing machines in which the boot or shoe is mounted on a jack which is oscillated automatically or otherwise to subject the entire curved periphery of the heel to the action of the burnishing-tool.

CLASS 12—Continued.

73. BURNISHING-MACHINES, HEEL, OSCILLATING-JACK, AUTOMATIC TRANSVERSE-FEED. Heel-burnishing machines of the oscillating-jack type in which the tool-head or jack or both have an automatic feed in a direction transverse to the plane of oscillation.

Search Class—

- 12—BOOT AND SHOE MAKING, subclass 75, Burnishing-machines, Heel, Oscillating tool-head, Automatic transverse-feed.

74. BURNISHING-MACHINES, HEEL, OSCILLATING TOOL-HEAD. Machines in which the boot or shoe is held immovable while the tool head or heads are oscillated to engage the entire curved periphery of the heel. A common form has a single tool mounted on a rock-shaft, one complete oscillation of which carries the tool from one end of the breast to the other and back.

75. BURNISHING-MACHINES, HEEL, OSCILLATING TOOL-HEAD, AUTOMATIC TRANSVERSE-FEED. Heel-burnishing machines of the oscillating-tool-head type in which the tool-head or jack or both have an automatic feed in a direction transverse to the plane of oscillation.

Search Class—

- 12—BOOT AND SHOE MAKING, subclass 73, Burnishing-machines, Heel, Oscillating-jack, Automatic transverse-feed.

76. BURNISHING-MACHINES, SHANK AND TREAD. Machines especially adapted to burnish the shank and tread surfaces of soles and heels.

77. BURNISHING-MACHINES, ROTARY-TOOL. Burnishing-machines in which the tool rotates.

Search Class—

- 12—BOOT AND SHOE MAKING, subclass 72, Burnishing-machines, Heel, Oscillating-jack.

78. BURNISHING-MACHINES, VIBRATING-TOOL. Burnishing-machines in which the tool is given a rapid vibration in a fixed path, usually in a straight line or in the arc of a circle.

Search Class—

- 12—BOOT AND SHOE MAKING, subclass 76, Burnishing-machines, Shank and tread.

79. BURNISHING-MACHINES, VIBRATING-TOOL, HAND-GUIDED. Burnishing-machines in which the vibrating tool is flexibly connected to the source of power and is guided by the hand of the operator.

Search Class—

- 12—BOOT AND SHOE MAKING, subclass 77, Burnishing-machines, Rotary-tool.

80. CEMENT-APPLYING DEVICES. Devices for applying cement to parts of boots and shoes in the course of their manufacture.

Search Class—

- 91—COATING, appropriate subclasses.

81. FELT-BOOT FORMERS. Devices for stretching and shaping felt-boot blanks or cones.

82. INSEAM-TRIMMING MACHINES. Machines for trimming the edges of the upper, welt, insole, or some of them at the seam which unites these parts.

83. INSEAM-TRIMMING MACHINES, HORN-CARRIED KNIFE. Machines for trimming the edge of the upper on the inside of a through-and-through-sewed shoe, the trimming-knife being mounted in a horn which is inserted in the shoe.

- 83.5. VAMP TRIMMING MACHINES. Machines for trimming off the surplus material at the edges of the vamp and lining of a lasted shoe after the lasting operation, in order to prepare the shoe for the insole sewing machine.

84. PEG-CUTTERS. Devices for cutting off and removing the ends of the sole and heel attaching pegs and nails which project into the shoe.

85. SOLE AND HEEL EDGE TRIMMERS. This subclass includes machines for trimming the edges of soles and heels.

(Note.—Machines for cutting out a sole-blank are found in this class in the various subclasses under the title of Sole-machines, Blank-rounding.)

Search Class—

- 12—BOOT AND SHOE MAKING, subclass 18, Sole-machines, Channeling and trimming.

86. SOLE AND HEEL EDGE TRIMMERS, CLAMPED-WORK. Machines in which the work is clamped to a work-support to present it to the cutter.

Search Class—

- 12—BOOT AND SHOE MAKING, subclasses 45, Heel-machines, Trimming and nailing, and 19, Sole-machines, Channeling and trimming, Clamped-work.

87. SOLE AND HEEL EDGE TRIMMERS, CLAMPED-WORK, ROTARY-CUTTER. Machines in which the work is clamped to a support to present it to the action of a rotary cutter.

88. SOLE AND HEEL EDGE TRIMMERS, ROTARY-CUTTER. Machines employing a rotary cutter-head.

Search Class—

- 12—BOOT AND SHOE MAKING, subclass 87, Sole and heel edge trimmers, Clamped-work, Rotary-cutter.

CLASS 12—Continued.

89. SOLE AND HEEL EDGE TRIMMERS, ROTARY-CUTTER, MULTIPLE CUTTER-HEAD. Machines provided with a plurality of rotary cutter-heads.

90. SOLE AND HEEL EDGE TRIMMERS, ROTARY-CUTTER, ADJUSTABLE RAND-GUIDE. An adjustable guide or guard runs between the rand and upper, guiding the rotary cutter and guarding the work.

91. SOLE AND HEEL EDGE TRIMMERS, ROTARY CUTTER-HEADS. The rotary cutter-heads used in sole and heel edge trimmers.

(Note.—Somewhat similar cutter-heads are found in class 144, WOOD-WORKING.)

92. SOLE AND HEEL EDGE TRIMMERS, ROTARY CUTTER-HEADS, AXIALLY-ADJUSTABLE. The cutter-head can be adjusted to trim work of different widths.

Search Class—

- 12—BOOT AND SHOE MAKING, subclass 89, Sole and heel edge trimmers, Rotary-cutter, Multiple cutter-head.

93. SOLE AND HEEL EDGE TRIMMERS, ROTARY CUTTER-HEADS, SUPPLEMENTAL CUTTERS. The cutter-head is provided with a supplemental cutter which trims the rand or face of the sole at the same time that the main cutter trims the edge.

Search Class—

- 12—BOOT AND SHOE MAKING, subclass 92, Sole and heel edge trimmers, Rotary cutter-heads, Axially-adjustable.

94. SOLE AND HEEL EDGE TRIMMERS, ROTARY CUTTER-HEADS, INSERTED CUTTERS. The cutters are not integral with the cutter-head, but are inserted therein.

Search Class—

- 12—BOOT AND SHOE MAKING, subclass 89, Sole and heel edge trimmers, Rotary-cutter, Multiple cutter-head.

95. SOLE AND HEEL EDGE TRIMMERS, ROTARY CUTTER-HEADS, INSERTED CUTTERS, ANGULARLY ADJUSTABLE. The inserted cutters can be adjusted angularly in the plane of revolution.

93. UPPER-CREASING. Devices for making the transverse creases sometimes formed in the vamps of uppers.

97. UPPER CRIMPING AND STRETCHING. Devices for stretching and molding uppers into shape to fit the foot. The operation is carried out prior to the securing together of the sole and upper and usually before the upper is closed upon itself.

98. UPPER CRIMPING AND STRETCHING, SHANK-STRETCHERS. Devices especially adapted for stretching the shank of the upper to give it the fullness necessary to fit the hollow of the foot.

99. UPPER CRIMPING AND STRETCHING, FORMER AND WIPER. The upper is crimped over a former by means of wiping-jaws. These jaws are usually in pairs, the former being forced down between them.

100. UPPER CRIMPING AND STRETCHING, FORMER AND WIPER, BELT-CARRIED FORMER. The former or formers are mounted on and carried by a traveling belt or chain, which draws the formers through the wiping-jaws.

101. UPPER CRIMPING AND STRETCHING, FORMER AND WIPER, PIVOTED-FORMER. The former is pivoted at a point of support about which it oscillates or revolves to carry it into or out of engagement with the wipers.

102. UPPER CRIMPING AND STRETCHING, FORMERS AND CLAMPS. Last-like bodies over which uppers are stretched and clamps for securing or stretching and securing the uppers thereto.

Search Class—

- 12—BOOT AND SHOE MAKING, subclass 110, Lasting-tools, Stretchers.

103. TOOLS. Miscellaneous tools used in the manufacture of boots and shoes.

104. BURNISHING-TOOLS. Machine and hand tools for burnishing boots and shoes.

Search Class—

- 12—BOOT AND SHOE MAKING, subclass 79, Burnishing-machines, Vibrating-tool, Hand-guided.

105. BURNISHING-TOOLS, ROTARY. Tools which are rotated to produce the rubbing action.

Search Class—

- 12—BOOT AND SHOE MAKING, subclass 77, Burnishing-machines, Rotary-tool.

106. CHANNELING-TOOLS. Hand-tools used in channeling boot and shoe soles.

Search Class—

- 12—BOOT AND SHOE MAKING, subclass 27, Sole-machines, Channeling for cutters used in channeling-machines.

107. LASTING-TOOLS. Miscellaneous tools used in the lasting of boots and shoes.

CLASS 12—Continued.

108. LASTING-TOOLS, NAILING AND STRETCHING. Nail-driving implements provided with upper-gripping devices.
Search Class—
 12—BOOT AND SHOE MAKING, subclass 3, Lasting and nailing machines, Hand-guided driver, and in class 1, NAILING AND STAPLING, subclasses 47, Implements, Nail-driving, and 46, Implements, Nail-driving, Magazine.

109. LASTING TOOLS, STRETCHERS AND HAMMERS. Stretchers of the plier type provided with a hammer-head.

110. LASTING-TOOLS, STRETCHERS. Hand-tools used in stretching the upper over the last in the lasting operation.

111. LASTING-TOOLS, STRETCHERS, MULTIPLE-GRIP. Stretchers provided with a plurality of gripping members, usually two in number, which are adapted to simultaneously grasp the edge of the upper at the opposite sides of the last.

112. LASTING-TOOLS, STRETCHERS, TOE. Lasting-stretchers peculiarly adapted to grasp the upper at the toe.

113. LASTING-TOOLS, FLY-CLOSERS. Devices for holding the flaps or flaps of uppers together during the lasting operation.

114. SOLE AND HEEL EDGE TRIMMERS, HAND-TOOLS. Hand-tools used in trimming the edges of soles and heels and for beveling and trimming welts.

Search Class—

12—BOOT AND SHOE MAKING, subclass 106, Channeling tools.

115. SOLE AND HEEL EDGE TRIMMERS, HAND-TOOLS, DOUBLE-GRIP. Edge-trimming tools provided with two handles or grips.

Search Class—

145—WOODWORKING-TOOLS, subclass 55, Spokeshaves, and subclasses thereunder.

116. BOOT-TREES. Forms which are inserted in boots or shoes to sustain them during the treeing operation. The form consists of a foot-piece which may be collapsible and a leg-piece which is usually detachable from the foot-piece and made in two parts. Mechanism is usually provided by which the leg and foot piece can be expanded. Some of the boot-trees are provided with hot-air chambers and pipes.

117. BOOT-TREES, PLUNGER-EXPANDED. Boot-trees which are expanded by the simple reciprocation of a plunger.

118. BOOT-TREES, FOOT-LOCKS. Devices in which the novelty lies exclusively in mechanism for locking a last to a boot-tree leg.

119. BOOT-TREES, FOOT-PIECES. Invention limited to the foot-piece of a boot-tree.

120. BOOT-TREES, CLASPS. Clasps attached to the leg of a boot-tree to catch and hold the top of the boot or shoe.

121. PATTERNS. Various patterns specially adapted to be used in laying out parts of boots and shoes.

Search Class—

223—APPAREL APPARATUS, subclass 1, Charts, for general patterns.

122. SHOEMAKERS' BENCHES. Work-benches specially adapted for shoemakers' uses.

123. WORK-SUPPORTS. Miscellaneous devices for holding and sustaining boots and shoes during the process of manufacture. (Note.—Shoemakers' repair-lasts are found in this subclass.)

124. WORK-SUPPORTS, EXPANSIBLE-HOLDER. The inserted holder may be expanded to fit different-sized shoes and to hold the shoe more securely.

(Note.—Mere expandible fillers to distend or stretch the shoe are found in the subclass 128, Formers, and subclasses thereunder in this class.)

Search Class—

12—BOOT AND SHOE MAKING, subclass 69, Boot-tree holders,

125. WORK-SUPPORTS, HEEL-CLAMPING. The shoe is held between clamping-jaws, one of which bears against the tread-surface of the heel, and sometimes against the sole as well, while the other enters the shoe and presses against the heel-seat or against an inserted last.

Search Class—

12—BOOT AND SHOE MAKING, subclass 72, Burnishing-machines, Heel, Oscillating-jack.

126. WORK-SUPPORTS, LAST-JACKS. Last-supports which require no modification or adaptation of the last structure or which require only the provision of one or more cylindrical holes in the heel of the last.

CLASS 12—Continued.

127. WORK-SUPPORTS, LAST-JACKS, SADDLE AND SPINDLE. The work-support is provided with a pin, which enters the socket in the heel of the last, and with a saddle-like toe-support in which the toe or instep portion of the last rests.

Search Class—

12—BOOT AND SHOE MAKING, subclass 122, Shoemakers' benches.

128. FORMERS. Devices other than boot-trees and boot-treeing machines for stretching and shaping or preserving the shape of the shoe after it is made.

Search Class—

12—BOOT AND SHOE MAKING, subclass 124, Work-supports, Expandible-holder.

129. FORMERS, PNEUMATIC. A flexible air-tight shoe-form is inserted in the shoe and is inflated by pneumatic pressure.

130. FORMERS, STRETCHERS. Devices for positively and continuously stretching a shoe to any desired degree and provided with means for then locking the stretcher.

Search Class—

12—BOOT AND SHOE MAKING, subclasses 116, Boot-trees; 117, Boot-trees, Plunger-expanded, and 124, Work-supports, Expandible-holder.

131. FORMERS, STRETCHERS, LATERAL AND LONGITUDINAL. Stretchers inserted in the shoe to stretch it both in the direction of its length and transversely thereto.

Search Class—

12—BOOT AND SHOE MAKING, subclass 119, Boot-trees, Foot-pieces.

132. FORMERS, STRETCHERS, LATERAL. Stretchers inserted in the shoe to operate transversely of the foot.

133. LASTS. Foot-forms over which boots and shoes are shaped and built up.

134. LASTS, ADJUSTABLE. The various parts of the last can be positively adjusted to adapt the last to different-sized shoes.

135. LASTS, SEPARATE HEEL-BLOCK. The heel-block is made separate from the rest of the last to facilitate insertion and removal from the shoe.

136. LASTS, SEPARATE HEEL-BLOCK, HINGED. The heel-block is hinged to the body of the last.

137. LASTS, INSTEP-BLOCK FASTENERS. Devices for securing the instep-block to the body of the last.

Search Class—

12—BOOT AND SHOE MAKING, subclass 134, Lasts, Adjustable.

138. LASTS, INSTEP-BLOCK FASTENERS, SLIDING-BOLT. The instep-block is secured to the last-body by a bolt which lies in registering sockets formed in the two parts of the last. To release the instep-block, the bolt slides out of engagement with one or the other of the last parts.

Search Class—

12—BOOT AND SHOE MAKING, subclass 135, Lasts, Separate heel-block for somewhat similar locking devices.

139. LASTS, HEEL-PLATES AND SOCKETS. Devices for strengthening the heel portion and socket of wooden lasts, so that they may be mounted on spindle-jacks and withstand heavy operations, such as sole-leveling.

140. LASTS, PEG-RECEIVERS. Lasts provided with grooves or sockets, which may or may not be filled with some material—such as rubber, soft wood, or the like—and into which the nails for securing the parts of the shoe to the last and to each other are driven.

141. LASTS, SHOE RETAINERS. Lasts provided with spurs or pins which hold the shoe or some of its parts in position on the last to obviate the necessity for driving pegs into the last.

142. PROCESSES. Processes of making boots and shoes except such as by their steps merely define the structure of the article made, such being found in class 36, BOOTS, SHOES, AND LEGGINGS.

143. ABOLISHED.

144. PROCESSES, BLANK-LAYING-OUT. Plans for laying out shoe-blanks on a hide or side of leather or sheet of other material, so that they may be cut up with a minimum of waste.

145. PROCESSES, LASTING. Processes of lasting.

146. PROCESSES, MISCELLANEOUS PARTS. Processes for making various separate parts of shoes, as soles, counter-stiffeners, etc.

147. PROCESSES, HEEL. Processes of making and attaching heels.

CLASS 14.—BRIDGES.

DEFINITIONS.

Class.

This class includes all structures by which a roadway or railroad is carried across a space intervening between supports and all structures, such as gates, etc., whose operation is dependent upon the operation of the bridge (as in drawbridges).

Structures for supporting an overhead railroad when more or less intimately associated with the rails or other features peculiar to railroads will be found in class 104, RAILWAYS, subclass 4, Elevated. Turn-tables, buffers, etc., which are not specific to bridges will be found in class 104, RAILWAYS.

Gates whose operation is not connected in some way with the operation of a drawbridge will be found in class 39, FENCES.

No attempt has been made to separate hand-rails used on bridges, even though they might be claimed. A few patents showing these will be found in various subclasses hereunder, usually neither claiming nor showing any structure which would distinguish these barriers from fences generally.

Wooden floors intended for general use and not claiming some feature specific to bridges will be found in class 20, WOODEN BUILDINGS.

Masonry and concrete arches, floors, and piers will be found in class 72, MASONRY AND CONCRETE STRUCTURES.

There has been no attempt in this classification to separate lateral bracing. Sometimes, as in suspension-bridges, the lateral bracing is more or less peculiar to the class of bridge structure. In some cases there appears to be no distinction in either structure or function between bracing intended to strengthen a bridge against wind-pressure and that intended to support weight, and they have all been classified together.

No clear line of separation can be made between bridge-trusses and roof-trusses. In both structure and function they may be identical. Patents have been separated according to the use shown and described. Where both uses have been shown and described, the patent has been placed in class 14, BRIDGES, and a cross-reference made in class 108, ROOFS, subclass 23, Trusses.

Subclasses.

1. MISCELLANEOUS. Miscellaneous bridge structures involving features not otherwise classifiable hereunder.

2. COMBINATION, TRUSS AND ARCH. Bridges combining the principle of the truss with that of the arch, the truss and arch being connected, but usually being clearly distinguishable as separate structures.

Search Class—

- 14.—BRIDGES, subclass 25, Arch, Compound, for arches including the principle of the truss in the structure of the arch.

3. TRUSS. Truss-bridges which include features not elsewhere classifiable in the subclasses hereunder.

Search Classes—

- 14.—BRIDGES, subclasses 2, Combination, Truss and arch, and 25, Arch, Compound.

- 104.—RAILWAYS, subclass 4, Elevated, for features similar to those shown in this class, subclasses 3, Truss; 4, Truss, Arrangement; 13, Truss, Structure, and 14, Truss, Details, Connections.

- 108.—ROOFS, subclass 23, Trusses, for features similar to those shown in subclasses 3, Truss; 4, Truss, Arrangement; 13, Truss, Structure; 14, Truss, Details, Connections; 15, Truss, Details, End shoes, and 16, Truss, Details, Expansion devices.

4. TRUSS, ARRANGEMENT. The arrangement in a completed truss of the several parts thereof when the invention lies in the relative location of the elements of the truss or the structure of the truss as a whole.

Search Class—

- 14.—BRIDGES, subclass 2, Combination, Truss and arch.

5. TRUSS, ARRANGEMENT, ADJUSTABLE. Truss-bridges which include some adjustable feature (usually, but not always, the camber).

Search Classes—

- 14.—BRIDGES, subclass 10, Truss, Arrangement, Bowstring, Adjustable.

- 61.—HYDRAULIC ENGINEERING, subclass 8, Docks.

6. TRUSS, ARRANGEMENT, DECK. Bridges in which the road is supported on the upper chord of the truss.

7. TRUSS, ARRANGEMENT, CANTILEVER. Miscellaneous bridges of the cantilever type.

Search Classes—

- 14.—BRIDGES, subclasses 31, Draw; 43, Draw, Horizontally-sliding, and 32, Draw, Swing, and the subclasses thereunder.

- 104.—RAILWAYS, subclass 19, Turn-tables.

8. TRUSS, ARRANGEMENT, CANTILEVER, SUSPENSION. Bridges of the cantilever type which include means of suspension as either a principal or a subordinate feature.

Search Class—

- 14.—BRIDGES, subclass 18, Suspension, and the subclasses thereunder.

CLASS 14—Continued.

9. TRUSS, ARRANGEMENT, BOWSTRING. Bridge-trusses of the special form of having the upper member an arc of a circle and the lower member the chord of said arc.

10. TRUSS, ARRANGEMENT, BOWSTRING, ADJUSTABLE. Bowstring truss-bridges which include some adjustable feature.

Search Class—

- 14.—BRIDGES, subclass 5, Truss, Arrangement, Adjustable.

11. TRUSS, ARRANGEMENT, INTERMEDIATE CATENARY. Bridge-trusses of the special form of having an approximate catenary in addition to the ordinary truss.

12. TRUSS, ARRANGEMENT, BOTH CHORDS CURVED. Bridge-trusses of the special form of having both chords curved, usually oppositely.

13. TRUSS, STRUCTURE. Structure of the members individually (usually, but not always, the upper chord) of trusses.

Search Classes—

- 14.—BRIDGES, subclass 17, Girder.

- 189.—METALLIC BUILDING STRUCTURES, subclasses 1, Buildings and the subclasses thereunder; 12, Skeleton towers, and the subclasses thereunder; and 38, Columns and the subclasses thereunder.

14. TRUSS, DETAILS, CONNECTIONS. Details of connections between the parts of trusses or to details of extensions of such parts.

Search Classes—

- 14.—BRIDGES, subclasses 5, Truss, Arrangement, Adjustable; 10, Truss, Arrangement, Bowstring, Adjustable; 15, Truss, Details, End shoes, and 75, Piers.

- 29.—METAL-WORKING, subclass 151, Blanks and processes, Bridge-irons.

- 105.—RAILWAY ROLLING-STOCK, subclasses 76, Cars, Floor-frames; 111, Trucks, Frames; 192, Cars, Freight, Frames, and 201, Cars, Passenger, Frames.

- 189.—METALLIC BUILDING STRUCTURES, subclasses 5, Buildings, Jails; 12, Skeleton towers; and 38, Columns and the subclasses thereunder.

- 239.—RAILWAY-RAILS AND JOINTS, subclasses under Rail-joints.

15. TRUSS, DETAILS, END SHOES. Devices connecting the end of the arch member of bowstring-trusses to the tension member. Patents of other kinds of trusses in which the compression and the tension chord are joined immediately and in which such connection is claimed are placed in this subclass.

Search Class—

- 14.—BRIDGES, subclass 14, Truss, Details, Connections for shoes somewhat similar in structure to End shoes and 16, Truss, Details, Expansion devices.

16. TRUSS, DETAILS, EXPANSION DEVICES. Devices for use usually on piers or at the ends of bridges to enable the bridge structure to expand or contract longitudinally under the influence of changes of temperature.

Search Class—

- 14.—BRIDGES, subclass 21, Suspension, Towers and anchors.

17. GIRDER. I-beams or other beams or equivalent structures for supporting roadways.

Search Classes—

- 29.—METAL-WORKING, subclass 155, Blanks and processes, Columns and girders.

- 104.—RAILWAYS, subclasses 19, Turn-tables, and 48, Transfer-tables.

- 189.—METALLIC BUILDING STRUCTURES, subclass 38, Columns and subclasses thereunder.

18. SUSPENSION. Suspension-bridges involving structures not elsewhere classifiable in the following subclasses.

Search Class—

- 14.—BRIDGES, subclasses 8, Truss, Arrangement, Cantilever, Suspension, and 11, Truss, Arrangement, Intermediate catenary.

19. SUSPENSION, COMPOUND SYSTEM. Bridges supported by more than two cables arranged in sets which are differently connected to the bridge.

20. SUSPENSION, SIMPLE SYSTEM. Bridges supported by a single cable or by a simple system of cables, every cable being similarly placed.

21. SUSPENSION, TOWERS AND ANCHORS. Supports and securing devices for suspension-cables.

Search Classes—

- 14.—BRIDGES, subclasses 7, Truss, Arrangement, Cantilever; 8, Truss, Arrangement, Cantilever, Suspension, and 26, Arch, Abutments and anchorages.

- 104.—RAILWAYS, subclass 4, Elevated, and subclasses thereunder.

- 189.—METALLIC BUILDING STRUCTURES, subclasses 12, Skeleton Towers; 38, Columns; 90, Land Anchors; and the subclasses under these.

CLASS 14—Continued.

22. SUSPENSION, CABLES, AND CABLE-CLAMPS. Structures (such as cables) specially designed to suspend bridges and devices for attachment of other parts to the cables.

Search Classes—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 16, Bale and package ties, and the subclasses thereunder, for means of connecting ends of cables together; 115, Cord and rope holders, and subclasses thereunder.

59—CHAIN, STAPLE, AND HORSESHOE MAKING, for chains.

248—SUPPORTS, subclass 31, Pipe or cable hangers.

23. SUSPENSION, CONSTRUCTIVE APPARATUS. Apparatus for use in getting cables into position.

24. ARCH. Bridges of the simple arch type not otherwise classifiable.

Search Classes—

14—BRIDGES, subclass 2, Combination, Truss and arch, and the subclasses under Draw, Bascule.

72—MASONRY AND CONCRETE STRUCTURES, for Masonry and concrete arches.

108—ROOFS, subclass 23, Trusses.

25. ARCH, COMPOUND. Bridges of the arch type in which the arch is not a simple structure, but is composed of a lattice girder, a bowstring-truss, or some other compound structure.

Search Classes—

14—BRIDGES, subclass 2, Combination, Truss and arch, and the subclasses under Draw, Bascule.

108—ROOFS, subclass 23, Trusses.

26. ARCH, ABUTMENTS AND ANCHORAGES. Supports for bridges of the arch type.

Search Class—

14—BRIDGES, subclasses 2, Combination, Truss and arch; 21, Suspension, Towers and anchors; the subclasses under Draw, Bascule, and 75, Piers.

27. FLOATING. Floating bridges involving structures not classifiable in the subclasses hereunder.

28. FLOATING, ADJUSTABLE HEIGHT. Floating bridges containing some structure to produce or to permit variations in the height of the road-bed.

Search Class—

14—BRIDGES, subclasses 42, Draw, Lift; 47, Draw, Aprons, and 71, Gangways, One end attached.

29. FLOATING, DRAW. Floating bridges of the draw type.

30. FLOATING, DRAW, LOCKING. Floating bridges of the draw type which show some form of device to lock the draw.

Search Class—

14—BRIDGES, the various subclasses (under the main subheading of "Draw") which include locking devices.

31. DRAW. Drawbridges involving structures not classifiable in any of the subclasses hereunder.

Search Class—

14—BRIDGES, subclasses 29, Floating, Draw, and 30, Floating, Draw, Locking.

32. DRAW, SWING. Drawbridges of the swing type not otherwise classifiable.

Note.—This subclass is limited to structures embodying some feature specifically intended for use in connection with a bridge.

Search Class—

104—RAILWAYS, subclasses 19, Turn-tables, and 48, Transfer-tables.

33. DRAW, SWING, HAND OR MOTOR OPERATED. Means of operating bridges of the swing type.

Search Class—

104—RAILWAYS, subclass 19, Turn-tables.

34. DRAW, SWING, BOAT-OPERATED. Bridges intended to be swung by an approaching boat and usually equipped with an automatic return.

Search Classes—

14—BRIDGES, subclass 44, Draw, Horizontally-sliding, Boat-operated.

39—FENCES, subclass 8, Gates, Swinging, and the subclasses thereunder.

35. DRAW, SWING, END SUPPORTS AND LOCKING DEVICES. Devices for connecting the ends of swing-bridges to the stationary supports for the purpose of support or locking, or both.

Search Classes—

14—BRIDGES, all subclasses that include locking devices.

61—HYDRAULIC ENGINEERING, subclass 8, Docks.

36. DRAW, BASCULE, FIXED-PIVOT. Bridges of the bascule type revolving on a fixed pivot not included in the subclasses hereunder.

Search Classes—

14—BRIDGES, subclasses 39, Draw, Bascule, Non-pivoted; 47, Draw, Aprons, and 71, Gangways, One end attached.

105—RAILWAY ROLLING-STOCK, subclasses 187, Cars, Dumping, Inwardly-tilting sections; 188, Cars, Dumping, Outwardly-tilting sections; 189, Cars, Dumping, Outwardly-tilting sections, Displaceable sides; 190, Cars, Dumping, Tilting body, and 191, Cars, Dumping, Tilting body, Displaceable sides.

119—ANIMAL HUSBANDRY, subclass 82, Gangways.

214—LOADING AND UNLOADING, subclasses 9, Raised track, Track end dump, Tilting track-section, and 11, Tilting platform.

CLASS 14—Continued.

37. DRAW, BASCULE, FIXED-PIVOT, HINGED SECTIONS. Bridges of the bascule type with a fixed pivot in which each vertically-swinging part is composed of sections hinged together.

38. DRAW, BASCULE, FIXED-PIVOT, RACK-AND-PINION. Bridges of the bascule type with a fixed pivot which are operated by a rack and pinion, the rack or the pinion being on the movable span and the other on a stationary part of the bridge.

Search Class—

14—BRIDGES, subclass 40, Draw, Bascule, Non-pivoted, Rack-and-pinion.

39. DRAW, BASCULE, NON-PIVOTED. Bridges of the bascule type with no fixed pivot which are operated otherwise than by a rack and pinion acting directly on the movable span.

Search Classes—

14—BRIDGES, subclasses 36, Draw, Bascule, Fixed-pivot; 47, Draw, Aprons, and 71, Gangways, One end attached.

105—RAILWAY ROLLING-STOCK, subclasses 187, Cars, Dumping, Inwardly-tilting sections; 188, Cars, Dumping, Outwardly-tilting sections; 189, Cars, Dumping, Outwardly-tilting sections, Displaceable sides; 190, Cars, Dumping, Tilting body, and 191, Cars, Dumping, Tilting body, Displaceable sides.

119—ANIMAL HUSBANDRY, subclass 82, Gangways.

214—LOADING AND UNLOADING, subclasses 9, Raised track, Track end dump, Tilting track-section, and 11, Tilting platform.

40. DRAW, BASCULE, NON-PIVOTED, RACK-AND-PINION. Bridges of the bascule type with no fixed pivot which are operated by a rack and pinion, the rack or the pinion being on the movable span and the other on a stationary part of the bridge.

Search Class—

14—BRIDGES, subclass 38, Draw, Bascule, Fixed-pivot, Rack-and-pinion.

41. DRAW, BASCULE, LOCKING DEVICES. Devices for positively locking the movable parts of bascule-bridges against vertical or lateral movement.

Search Class—

14—BRIDGES, subclasses which include locking devices.

42. DRAW, LIFT. Drawbridges moving vertically (either up or down from normal position) with usually no horizontal motion.

Search Classes—

14—BRIDGES, subclass 71, Gangways, One end attached, and the various subclasses of Vertically-sliding under Draw, Gates.

39—FENCES, subclass 24, Gates, Dropping.

61—HYDRAULIC ENGINEERING, subclass 48, Docks, Lifting.

43. DRAW, HORIZONTALLY-SLIDING. Drawbridges which open by a horizontal longitudinal movement.

Search Classes—

14—BRIDGES, subclass 72, Gangways, Unattached.

104—RAILWAYS, subclass 4, Elevated.

44. DRAW, HORIZONTALLY-SLIDING, BOAT-OPERATED. Longitudinally-moving drawbridges which are operated by an approaching boat.

Search Class—

14—BRIDGES, subclass 34, Draw, Swing, Boat-operated.

45. DRAW, LAZY-TONGS. Drawbridges operated by one or more lazy-tongs.

Search Classes—

39—FENCES, subclass 21, Gates, Expanding.

227—FIRE-ESCAPES, subclass 15, Lazy-tongs, and the subclasses thereunder.

46. DRAW, LOCKING DEVICES. Devices not otherwise classifiable for positively locking drawbridges against movement.

Search Class—

14—BRIDGES, in the various subclasses under the main subtitles of Draw and Floating which include locking devices.

47. DRAW, APRONS. Devices, usually constituting part of the floor or roadway and connecting the draw to the fixed span, (being hinged to one or the other,) which are moved out of the way either prior to or during the movement of the draw

Search Class—

14—BRIDGES, subclasses 28, Floating, Adjustable height; the subclasses under Draw, Bascule, and 71, Gangways, One end attached.

48. DRAW, BUFFERS. Structures which when the draw is open project above the roadway to receive the impact of a moving car or other object and designed to resist considerable force.

Note.—This subclass is limited to buffers actuated by drawbridges.

Search Classes—

104—RAILWAYS, subclass 49, Buffers, for stationary buffers for railway use.

186—STORE-SERVICE, subclasses 24, Buffers, and 25, Buffers, Slide.

49. DRAW, SIGNALS. Some form of signal apparatus to be used in connection with drawbridges and usually operated simultaneously with the gates.

This subclass is limited to signals whose operation involves some features specific to bridges.

50. DRAW, GATES. Gates for drawbridges which involve structures not otherwise classifiable.

This subclass and the subclasses hereunder are limited to gates whose operation involve some feature specific to bridges.

CLASS 14—Continued.

Search Classes—

- 14—BRIDGES, subclass 37, Draw, Bascule, Fixed-pivot, Hinged sections.
- 39—FENCES.
- 61—HYDRAULIC ENGINEERING, subclasses 46, Water-gates, Sliding; 47, Water-gates, Swinging, and 56, Wharves, Gates.
51. DRAW, GATES, HAND OR MOTOR OPERATED, HORIZONTALLY-SWINGING. Drawbridges having a horizontally-sliding gate operated or controlled wholly or in part by hand or motor power. If the operation is partly automatic, a cross-reference is made to the appropriate bridge-operated subclass.
52. DRAW, GATES, HAND OR MOTOR OPERATED, VERTICALLY-SLIDING. Drawbridges having a vertically-sliding gate operated or controlled wholly or in part by hand or motor power. If the operation is partly automatic, a cross-reference is made to the appropriate bridge-operated subclass.
- Search Classes—**
14—BRIDGES, subclasses 42, Draw, Lift, and 71, Gangways, One end attached.
- 61—HYDRAULIC ENGINEERING, subclass 48, Docks, Lifting.
53. DRAW, GATES, HAND OR MOTOR OPERATED, VERTICALLY-SWINGING. Drawbridges having a vertically-sliding gate operated or controlled wholly or in part by hand or motor power. If the operation is partly automatic, a cross-reference is made to the appropriate bridge-operated subclass.
54. DRAW, GATES, BRIDGE-OPERATED, DISPLACEMENT, HORIZONTALLY - SLIDING. Drawbridges which operate a horizontally-sliding gate by contact therewith or by displacing the member of the operative mechanism which contacts with the movable span without immediately rotating the shaft.
- Search Class—**
14—BRIDGES, subclasses 50, Draw, Gates, and 62, Draw, Gates, Bridge-operated, Shaft-rotation, Horizontally-sliding.
55. DRAW, GATES, BRIDGE-OPERATED, DISPLACEMENT, HORIZONTALLY-SLIDING, LOCKING. Drawbridges which operate a horizontally-sliding gate by contact therewith or by displacing the member of the operative mechanism which contacts with the movable span without immediately rotating a shaft, said gate having an attachment for locking it in one position.
- Search Class—**
14—BRIDGES, subclasses which include locking devices.
56. DRAW, GATES, BRIDGE - OPERATED, DISPLACEMENT, HORIZONTALLY - SWINGING. Drawbridges which operate a horizontally-sliding gate by displacing the member of the operative mechanism which contacts with the movable span without immediately rotating a shaft.
- Search Class—**
14—BRIDGES, subclasses 51, Draw, Gates, Hand or motor operated, Horizontally-sliding, and 64, Draw, Gates, Bridge-operated, Shaft-rotation, Horizontally-sliding.
57. DRAW, GATES, BRIDGE - OPERATED, DISPLACEMENT, HORIZONTALLY-SWINGING, LOCKING. Drawbridges which operate a horizontally-sliding gate by displacing the member of the operative mechanism which contacts with the movable span without immediately rotating a shaft, said gate having an attachment for locking it in one position.
- Search Class—**
14—BRIDGES, all subclasses which include locking devices.
58. DRAW, GATES, BRIDGE - OPERATED, DISPLACEMENT, VERTICALLY-SLIDING. Drawbridges which operate a vertically-sliding gate by immediate contact therewith or by displacing the member of the operative mechanism which contacts with the movable span without immediately rotating a shaft.
- Search Class—**
14—BRIDGES, subclasses 52, Draw, Gates, Hand or motor operated, Vertically-sliding, and 66, Draw, Gates, Bridge-operated, Shaft-rotation, Vertically-sliding.
59. DRAW, GATES, BRIDGE - OPERATED, DISPLACEMENT, VERTICALLY-SLIDING, LOCKING. Drawbridges which operate a vertically-sliding gate by immediate contact therewith or by displacing the member of the operative mechanism which contacts with the movable span without immediately rotating a shaft, said gate having an attachment for locking it in one position.
- Search Class—**
14—BRIDGES, all subclasses which include locking devices.
60. DRAW, GATES, BRIDGE - OPERATED, DISPLACEMENT, VERTICALLY-SWINGING. Drawbridges which operate a vertically-sliding gate by immediate contact therewith or by displacing the member of the operative mechanism which contacts with the movable span without immediately rotating a shaft.
- Search Class—**
14—BRIDGES, subclasses 53, Draw, Gates, Hand or motor operated, Vertically-sliding, and 68, Draw, Gates, Bridge-operated, Shaft-rotation, Vertically-sliding.

CLASS 14—Continued.

61. DRAW, GATES, BRIDGE - OPERATED, DISPLACEMENT, VERTICALLY-SWINGING, LOCKING. Drawbridges which operate a vertically-sliding gate by immediate contact therewith or by displacing the member of the operative mechanism which contacts with the movable span without immediately rotating a shaft, said gate having an attachment for locking it in one position.
- Search Class—**
14—BRIDGES, all subclasses which include locking devices.
62. DRAW, GATES, BRIDGE - OPERATED, SHAFT-ROTATION, HORIZONTALLY-SLIDING. Drawbridges which operate a horizontally-sliding gate by first rotating a shaft in the operating mechanism.
- Search Class—**
14—BRIDGES, subclasses 50, Draw, Gates, and 54, Draw, Gates, Bridge-operated, Displacement, Horizontally-sliding.
63. DRAW, GATES, BRIDGE-OPERATED, SHAFT-ROTATION, HORIZONTALLY - SLIDING, LOCKING. Drawbridges which operate a horizontally-sliding gate by first rotating a shaft in the operating mechanism, said gate having an attachment for locking it in one position.
- Search Class—**
14—BRIDGES, all subclasses that include locking devices.
64. DRAW, GATES, BRIDGE-OPERATED, SHAFT-ROTATION, HORIZONTALLY - SWINGING. Drawbridges which operate a horizontally-sliding gate by first rotating a shaft in the operating mechanism.
- Search Class—**
14—BRIDGES, subclasses 56, Draw, Gates, Bridge-operated, Displacement, Horizontally-sliding, and 51, Draw, Gates, Hand or motor operated, Horizontally-sliding.
65. DRAW, GATES, BRIDGE-OPERATED, SHAFT-ROTATION, HORIZONTALLY - SWINGING, LOCKING. Drawbridges which operate a horizontally-sliding gate by first rotating a shaft in the operating mechanism, said gate having an attachment for locking it in one position.
- Search Class—**
14—BRIDGES, all subclasses which include locking devices.
66. DRAW, GATES, BRIDGE-OPERATED, SHAFT-ROTATION, VERTICALLY-SLIDING. Drawbridges which operate a vertically-sliding gate by first rotating a shaft in the operating mechanism.
- Search Class—**
14—BRIDGES, subclasses 52, Draw, Gates, Hand or motor operated, Vertically-sliding, and 58, Draw, Gates, Bridge-operated, Displacement, Vertically-sliding.
67. DRAW, GATES, BRIDGE-OPERATED, SHAFT-ROTATION, VERTICALLY - SLIDING, LOCKING. Drawbridges which operate a vertically-sliding gate by first rotating a shaft in the operating mechanism, said gate having an attachment for locking it in one position.
- Search Class—**
14—BRIDGES, all subclasses which include locking devices.
68. DRAW, GATES, BRIDGE-OPERATED, SHAFT-ROTATION, VERTICALLY-SWINGING. Drawbridges which operate a vertically-sliding gate by first rotating a shaft in the operating mechanism.
- Search Class—**
14—BRIDGES, subclasses 53, Draw, Gates, Hand or motor operated, Vertically-sliding, and 60, Draw, Gates, Bridge-operated, Displacement, Vertically-sliding.
69. DRAW, GATES, BRIDGE-OPERATED, SHAFT-ROTATION, VERTICALLY-SWINGING, LOCKING. Drawbridges which operate a vertically-sliding gate by first rotating a shaft in the operating mechanism, said gate having an attachment for locking it in one position.
- Search Class—**
14—BRIDGES, subclasses which include locking devices.
70. GANGWAYS, ENDLESS CONVEYER. Gangways which include an endless conveyer as the whole or a part of the floor.
- Search Classes—**
34—DRIERS, subclass 12, Endless carrier.
56—HARVESTERS, subclasses 61, Hay-loaders, Endless belts, 89, Self-rakers, Endless carriers, and 107, Corn-harvesters, Stalk-cutters, Droppers, Endless apron.
93—PAPER MANUFACTURES, subclass 7, Wrapping-machines, Traveling carrier.
119—ANIMAL HUSBANDRY, subclass 82, Gangways.
107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 57, Bakers' ovens, Charging and removing devices, Endless carrier.
126—STOVES AND FURNACES, subclass 272, Liquid-sterilizers.
130—THRESHING, subclass 21, Grain-separators, Straw-carriers, Endless aprons.
193—CONVEYERS, subclass 2, Endless, and the subclasses thereunder.
227—FIRE-ESCAPES, subclass 10, Endless carriers.
71. GANGWAYS, ONE END ATTACHED. Gangways of which one end is attached either to the fixed structure or to the vessel. Also means for raising the free ends of such gangways.
- Search Classes—**
14—BRIDGES, subclasses under Draw, Bascule, and 42, Draw, Lift, and 47, Draw, Aprons.
105—RAILWAY ROLLING-STOCK, subclass 21, Cars, Safety bridges.
119—ANIMAL HUSBANDRY, subclass 82, Gangways.

CLASS 14—Continued.

72. **GANGWAYS, UNATTACHED.** Removable gangways which are lifted or slid or rolled into position.
Search Classes—
 14—BRIDGES, subclasses 31, Draw, and 43, Draw, Horizontally-sliding.
 119—ANIMAL HUSBANDRY, subclass 82, Gangways.
73. **FLOORS.** Floors and appurtenances thereto which are specific to bridge structures.
Search Classes—
 20 Wooden Buildings.
 72 Masonry and Concrete Structures.
 189 Metallic Building Structures for floors adapted for general use or for specific use elsewhere.
74. **COVERINGS.** Devices for covering and protecting separately the members of a bridge. Does not include structures for covering a bridge as a whole.

CLASS 14—Continued.

- Search Class—**
 14—BRIDGES subclass 76, Piers, Fenders.
75. **PIERS.** Piers not otherwise classified.
Search Classes—
 61—HYDRAULIC ENGINEERING, subclass 31, Wharves, for piles.
 72—MASONRY AND CONCRETE STRUCTURES for masonry and concrete piers.
76. **PIERS, FENDERS.** Structures designed to protect piers from damage by boats, ice, driftwood, etc.
Search Classes—
 14—BRIDGES, subclass 74, Coverings.
 114—SHIPS, subclasses 219, Fenders, and 220, Fenders, Roller.
77. **PIERS, PROCESSES.** Methods of constructing piers and appliances and structures for such purpose.
Search Classes—
 61—HYDRAULIC ENGINEERING, for caissons, cribs, coffer-dams, and pile-drivers.
 72—MASONRY AND CONCRETE STRUCTURES generally.

CLASS 18.—PLASTICS.

DEFINITIONS.

Class.

This is a general class for the working, especially molding and casting, of miscellaneous nonmetallic plastic materials to make and reproduce articles of a definite shape; but it does not include the working or molding of pastry, (class 107,) sugar, (class 127,) peat, (class 44,) clay and earthenware, (class 25,) glass, (class 49,) nor the making of paper, (class 92,) or butter, (class 31.). Neither does it include the molding of the following articles: sand molds, (class 22,) pills, confectionery, and confectionery molds, (class 107,) stereotype-matrices, (class 198,) cigars, (class 131,) dental plates and teeth, (class 32.)

The shaping and embossing of sheets of miscellaneous non-metallic plastic materials, except textile fabrics, leather, and wood, to make articles of definite shape is also included. The shaping of moist paper is included where the shaping or embossing action makes an article that does not require further molding instead of a sheet or blank; but the shaping of dry paper in drawing-dies is classified in class 113.

The common property of plasticity renders molding operations of chief importance in this class. Where there exists an art class that can properly include all operations preliminary to molding, such operations will be classified in such class, the molding only being placed in this class, as oils, fats, glues (class 87,) chemicals, (class 23,) capsules, (class 128.) The manufacture of viscose and other chemical compounds of cellulose is included in class 23, CHEMICALS, subclass 24, Carbon compounds. The manufacture of pyroxylin and the introduction of an antacid, whether to make an explosive, a plastic, or a varnish, is included in class 52, EXPLOSIVES, subclass 3, Nitro compounds. The treatment of the materials in making compositions containing pyroxylin, viscose, or cellulose and the compositions are classified in classes 106, PLASTIC COMPOSITIONS, and 134, LIQUID COATING COMPOSITIONS; but when a combination of molding operations with any of the other operations mentioned above is claimed the patents, if relating to the treatment of a compound or a mixture obtained by a process involving the action of chemicals on cellulose, are included in this class and cross-referenced into the other class or classes involved.

When there is no class which could include such operations, the entire preparation of the material is included in this class, (caoutchouc, gutta-percha, amber, horn, plaster-of-paris, scraps of cork, leather, etc.); but only those are included in which the preliminary operations are performed for the purpose of preparing the material for molding. Grinding, mixing, and tempering capable of general application are classified in class 83, MILLS; but the preliminary preparation of caoutchouc and similar gums, even when limited to these operations, is included in this class.

Subsequent treatment, such as baking, drying, annealing, burning, cutting, punching, bending, etc., when performed entirely after the article is removed from the mold will be classified with the proper functional classes; but when there is neither a proper functional class nor art class the treatment of these plastic materials will be retained in this class—for example, making veneers of pyroxylin compounds to imitate various materials, making artificial silk, treating vulcanized rubber, etc.

By "molding operations" is meant, besides the act of molding itself, the preparation of the mold, as by coating it, charging, heating, or cooling the mold, stripping or ejecting the article, and the like, and where articles are made in continuous long lengths cutting them apart.

Plastic compositions and their preparation are included in class 106, PLASTIC COMPOSITIONS, as per definition of that class; but this class is superior to class 106, and when there is an alleged combination between the preparation of the composition and subsequent treatment thereof the latter will be included in this class.

Coating articles with a plastic composition is classified in class 91, COATING, except where a molding or shaping operation is involved, when it is included in this class. Making composite or laminated articles—such as fabrics, tubes, tires, roof-coverings, insulated cables, and the like—by building up, cementing, winding, etc., sheets, strips, and the like, whether combined or not with molding operations, is excluded from this class, (see especially class 154, LAMINATED FABRICS AND ANALOGOUS MANUFACTURES; but the manufacture of the same articles when limited to molding operations, as defined above is included in this class.

Articles made of plastic materials and article processes are in general classified with the respective arts to which they are most nearly related; but machine processes, under the restrictions noted above, are included in this class.

Subclasses.

1. MISCELLANEOUS APPARATUS. Apparatus for use in working plastic materials and not otherwise classified. Includes apparatus for assembling and transferring molded articles and blanks, (lacing-hooks, etc.) for combinations of molding and other operations not otherwise classified, and for treating other plastic materials than pyroxylin, vulcanizable gums, and their compounds.

2. MISCELLANEOUS APPARATUS, VULCANIZABLE GUMS. Apparatus not confined to molding, shaping, and vulcanizing, for preparing and treating all vulcanizable gums, such as caoutchouc and gutta-percha.

Search Class—

18—PLASTICS, subclass 52, Processes, Restoring caoutchouc.

CLASS 18—Continued.

3. MISCELLANEOUS APPARATUS, PYROXYLIN. Apparatus, not confined to molding and shaping, for treating pyroxylin and its plastic compositions (celluloid).

Note.—Apparatus for analogous use with viscose and other unnitrated cellulose compounds are included in subclass 1, Miscellaneous apparatus, this class.

Note.—Attention is called to the third paragraph of the general definition.

Search Class—

181, ACCUSTICS, subclass 16, Graphophones, Tablets, Duplicating devices.

3.5. PUTTING DEVICES. Tools, knives, and other devices for applying putty in setting glass, including machines for forcing the putty through a die onto glass.

Search Classes—

18—PLASTICS, subclasses 12, Molding devices, Die-expressing, and 13, Molding devices, Die-expressing, Compound.

72—MASONRY AND CONCRETE STRUCTURE, subclass 128, Implements.

107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 52, Implements, Depositors.

4. MOLDING PLANTS. Apparatus including molding or casting devices in combination with means for performing one or more other operations not included in the definition of molding operations given above.

Search Classes—

22—METAL-FOUNDING, subclasses 13, Molds, metal, Ingots, and pigs; 20, Molding apparatus, Plants, and subclasses under each of these.

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 2, Brick-making plants.

44—FUEL, subclass 3, Peat-machines.

107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 3, Starch molding apparatus.

5. MOLDING DEVICES. Apparatus for forming plastic material into the desired shape not otherwise classifiable. It does not include combinations of molding with any operations except those mentioned in the definition of the class as molding operations.

Search Classes—

22—METAL-FOUNDING, subclasses 17, Molded molds, Tools and arts, 42, Molding apparatus, Machines; 185, Molding tools, and subclasses thereunder.

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 1, Miscellaneous; 7, Soap-molding, devices; 22, Pottery-machines; 23, Pottery-machines, Fluid-operated; 30, Pipe-machines; 31, Pipe-machines, Fluid-operated; 33, Pipe-machines, Multitubular; 34, Pipe machines, Multitubular, Perforators, 35, Pipe-machines, Perforating-former; 41, Block-molding machines, and the subclasses thereunder.

31—DAIRY, subclass 25, Butter-workers and molds.

92—PAPER-MAKING AND FIBER LIBERATION, subclasses 58, Pulp molding, Centrifugal action; 66, Pulp molding, winders; 67, Pulp molding, Winders, Sheet and board forming.

107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 1, Composite cake and confection apparatus; 3, Starch molding apparatus; 8, Molding apparatus; 9, Molding apparatus, loaf forming; 27, Depositing apparatus, and subclasses thereunder.

6. MOLDING DEVICES, HEATING AND VULCANIZING. Apparatus for molding or shaping combined with means for heating or vulcanizing, except presses, heating-pots, and molds.

Search Class—

18—PLASTICS, subclass 52, Processes, Restoring caoutchouc.

7. MOLDING DEVICES, HEATING AND VULCANIZING, POTS. Vulcanizing-pots for containing flasks or molds with or without means for clamping the flasks or molds. Chiefly used for vulcanizing dental plates.

8. MOLDING DEVICES, FILAMENT-FORMING. Apparatus without molds in the ordinary sense of the word for forming filaments or threads. May include means for spinning, twisting, coiling, and drawing out the filaments.

Note.—Means for making filaments by simply expressing through dies are classified in this class, subclass 12, Molding devices, Die-expressing.

Search Class—

18—PLASTICS, subclass 54, Processes, Filament-forming.

9. MOLDING DEVICES, ROLLING. Apparatus in which a shapeless mass of material is pressed into form by means of surfaces having a rolling contact. Frequently only one of the surfaces is a roller. Making compound articles in this manner is included in this class, subclass 11, Molding devices, rolling, compound. Machines in which the material is first passed through a die or other preliminary molding machine and then shaped by rolling are included.

Search Classes—

18—PLASTICS, subclasses 2, Miscellaneous apparatus, Vulcanizable gums; 10, Molding devices, Rolling, Sheets, and 11, Molding devices, Rolling, Compound.

CLASS 18—Continued.

- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 5, Playing-marble machines; 20, Die-expressing, Dies, Perforating and ornamenting; 21, Roller-forming; 76, Block-presses, Rotary-mold, Peripheral, Continuous, Opposed mold-wheel; 77, Block-presses, Rotary-mold, Peripheral, Continuous, Opposed mold-wheel, Mating.
- 131—TOBACCO, subclass 14, Plug-making.
- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 6, Combined machines, Cutting and distributing; 10, Molding apparatus, Rolling; subclasses thereunder; 34, Mixers, kneaders, and beaters, Roller; 48, Implements, Pie crimpers and trimmers; and 50, Implements, Rolling pins.
- 198—MATRIX-MAKING, subclass 6, Rotary-die carrier.
- 207—PLASTIC METAL WORKING.
10. MOLDING DEVICES, ROLLING, SHEETS. Apparatus for embossing and shaping plastic material in sheet form by rolling. Does not include making sheets by rolling the mass of plastic material into sheet form.
- Search Classes—**
- 12—BOOT AND SHOE MAKING, subclass 65, Toe and heel stiffener machines, Molding, Roll.
- 68—LAUNDRY, subclasses 7, Fluting-irons, and 9, Ironing-machines.
- 69—LEATHER MANUFACTURES, subclass 5, Machines, Folding and rolling.
- 144—WOODWORKING, subclass 273, Wood-ornamenting, Embossing, Die-rollers.
- 149—HIDES, SKINS, AND LEATHER, subclass 23, Apparatus, Rolling and embossing.
- 201—METAL-ORNAMENTING, subclass 5, Die pressing, Roller and bed.
11. MOLDING DEVICES, ROLLING, COMPOUND. Under the restrictions of subclass 9, Molding devices, Rolling, apparatus for making compound articles by rolling together two or more materials, at least one of which is plastic—for example, putting a plastic composition on picture frames and moldings to prepare them for gilding.
12. MOLDING DEVICES, DIE-EXPRESSING. Apparatus in which the material is shaped by being forced or drawn through a die, except to make hollow, tubular, and compound articles. Charging, and even mixing, is included when in combination with the molding.
- Note.—When the material is rolled to shape it after passing through the die, patents are included in subclass 9, Molding devices, Rolling, of this class.
- Search Classes—**
- 18—PLASTICS, subclasses 8, Molding devices, Filament-forming; 13, Molding devices, Die-expressing, Compound; 14, Molding devices, Die-expressing, Tube and hollow, and 30, Molding devices, Chargers.
- 17—BUTCHERING, subclass 6, Sausage-machines.
- 22—METAL-FOUNDING, subclass 166, Cores, Pipe.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 8, Soap-molding devices, Die-expressing, and 11, Die-expressing, and the subclasses thereunder.
- 44—FUEL, subclass 3, Peat-machines.
- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 14, Molding apparatus, Die-expressing; and 27, Depositing apparatus, and subclasses thereunder.
- 152—RESILIENT TIRES AND WHEELS, subclass 23, Repairing.
- 184—LUBRICATING, subclasses under Lubricators, Force-feed, Followers.
- 207—PLASTIC METAL WORKING, Die-expressing subclasses.
- 221—DISPENSING CANS, subclass 79, Tanks, Pressure, Follower, Screw.
13. MOLDING DEVICES, DIE-EXPRESSING, COMPOUND. Apparatus for making compound articles by expressing through dies. Usually a solid or plastic core is drawn through the die and a coating is molded upon it, as in making moldings.
- Search Classes—**
- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 1, Composite cake and confection apparatus.
- 173—ELECTRICITY, CONDUCTORS, subclass 244, Machines for covering.
- 207—PLASTIC METAL WORKING.
14. MOLDING DEVICES, DIE-EXPRESSING, TUBE AND HOLLOW. Apparatus for forming tubes or other hollow articles by expressing through a die.
- Search Classes—**
- 18—PLASTICS, subclass 13, Molding devices, Die-expressing, Compound.
- 22—METAL-FOUNDING, subclass 166, Cores, Pipe.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 13, Die-expressing, Pottery; 14, Die-expressing, Screw-ejector; 17, Die-expressing, Dies; 20, Die-expressing, Dies, Perforating and ornamenting, and 30, Pipe-machines.
- 207—PLASTIC METAL WORKING.
15. MOLDING DEVICES, FILM-SPREADING. Apparatus for making filaments or sheets by spreading a liquid or semiliquid material upon a plane or other surface, upon which it solidifies and from which it is afterward removed. Does not include applying a permanent coating, shaping sheets previously formed, or forming articles by dipping.
- Search Class—**
- 18—PLASTICS, subclasses 24, Molding devices, Dipping; 25, Molding devices, Dipping, Capsule-machines, and 41, Molding devices, Molds, Dipping.
16. MOLDING DEVICES, PRESSES. Instruments not otherwise classifiable for compressing and molding plastic materials to make articles.

CLASS 18—Continued.

Search Classes—

22. METAL-FOUNDING, subclasses 42, Molding apparatus, Packing sand, Presses, and subclasses thereunder; and 46, Molding apparatus, Packing sand, Press heads and plungers.

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 7, Soap-molding devices; 27, Pottery-machines, Presses; 45, Block-presses; all subclasses under the subtitle Block-presses, Portable mold; 99, Block-presses, Endless chain of molds, Continuous-travel; 100, Block-presses, Endless chains of molds, Intermittent-travel; 101, Block-presses, Expanding-mold; and 102, Block-presses, Plungers.

31—DAIRY, subclass 25, Butter workers and molds.

49—GLASS, subclass 35, Molding-presses and subclasses thereunder.

92—PAPER-MAKING AND FIBER LIBERATION, subclass 59, Pulp-molding, Compressors.

100—PRESSES, all subclasses.

107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 3, Starch-molding apparatus; 15, Molding apparatus, Presses; and 16, Molding apparatus, Presses, Popcorn.

131—TOBACCO, subclass 14, Plug-making.

198—MATRIX-MAKING, subclasses 1, Bar; 3, Miscellaneous; 4, Reciprocating die-carrier, Electrical; 5, Reciprocating die-carrier, Mechanical, and 6, Rotary die-carrier.

17. MOLDING DEVICES, PRESSES, HEATING AND VULCANIZING. Presses for holding and molding the material while heating and vulcanizing. Contains combinations of presses with heating-pots, flasks, molds, or heating means, but does not include molding by expressing through heated dies or with heated rollers.

Search Classes—

18—PLASTICS, subclass 18, Molding devices, Presses, Heating and vulcanizing, Tire-repairing; also 198, MATRIX-MAKING, subclass 1, Miscellaneous.

18. MOLDING DEVICES, PRESSES, HEATING AND VULCANIZING, TIRE-REPAIRING. Presses, under the restrictions of subclass 17 above, for holding and vulcanizing tires and parts of tires in repairing them.

Search Class—

18—PLASTICS, subclass 17, Molding devices, Presses, Heating and vulcanizing.

19. MOLDING DEVICES, PRESSES, SHEET-SHAPING. Presses for shaping and embossing plastic sheets without substantially changing the thickness, as distinguished from molding from a shapeless plastic mass. Does not include making sheets.

Search Classes—

18—PLASTICS, subclasses 16, Molding devices, Presses; 17, Molding devices, Presses, Heating and vulcanizing; 18, Molding devices, Presses, Heating and vulcanizing, Tire-repairing; 20, Molding devices, Presses, Rotary Mold-support; 22, Molding devices, Presses, Reciprocating mold, and 23, Molding devices, Presses, Stationary-mold.

93—PAPER MANUFACTURES.

144—WOODWORKING, subclass 272, Wood-ornamenting, Embossing.

198—MATRIX-MAKING, subclasses 4, Reciprocating die-carrier, Electrical; 5, Reciprocating die-carrier, Mechanical, and 6, Rotary die-carrier.

201—METAL-ORNAMENTING, subclass 3, Die-pressing.

20. MOLDING DEVICES, PRESSES, ROTARY MOLD-SUPPORT. Presses in which the molds are mounted on the face of a rotating support.

Search Classes—

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 63, Block-presses, Rotary-mold, Fluid-operated, and those under the subtitle of Block-presses, Rotary-mold, Facial, beginning with 64.

41—ORNAMENTATION, subclass 24, Surface type, Relief and intaglio, and classes there cited.

107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 17, Molding apparatus, Presses, Tablet.

198—MATRIX-MAKING, subclass 6, Rotary die-carrier.

21. MOLDING DEVICES, PRESSES, ROTARY MOLD-SUPPORT, PERIPHERAL. Presses in which the molds are mounted on the periphery of a rotating mold-support.

Search Classes—

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 9, Soap-molding devices, Rotary-mold, and all subclasses under the subtitle of Block-presses, Rotary-mold, Peripheral, beginning with 75.

107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 10, Molding apparatus, Rolling, and 17, Molding apparatus, Presses, Tablet.

22. MOLDING DEVICES, PRESSES, RECIPROCATING-MOLD. Presses in which the mold is mounted to reciprocate.

Search Class—

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 7, Soap-molding devices, and 54, Block-presses, Reciprocating-mold, and subclasses thereunder.

23. MOLDING DEVICES, PRESSES, STATIONARY-MOLD. Presses in which the main part of the mold is stationary. The mold may be removable; but it is not intended to move during the operation of any part of the machine; but one or more plungers always move in or through the mold.

CLASS 18—Continued.

Search Classes—

- 18—PLASTICS, subclasses 17, Molding devices, Presses, Heating and vulcanizing; 18, Molding devices, Presses, Heating and vulcanizing, Tire-repairing, and 19, Molding devices, Presses, Sheet-shaping; also 25, PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 10, Soap-molding devices, Stationary-mold; 27, Pottery-machines, Presses; 28, Pottery-machines, Presses, Bottom ejectors; 30, Pipe-machines; 31, Pipe-machines, Fluid-operated; 33, Block-presses, Stationary-mold, and subclasses thereunder, and 101, Block-presses, Expanding-mold.
- 31—DAIRY, subclass 25, Butter workers and molds.
- 92—PAPER-MAKING AND FIBER LIBERATION, subclass 59, Pulp-molding, Compressors, and subclasses thereunder.
- 100—PRESSES, subclass 51, Expressing, Articles and attachments, Cake-formers; 107, BREAD, PASTRY, AND CONFECTION MAKING, subclasses 15, Molding apparatus, Presses; 16, Molding apparatus, Presses, Popcorn, and 18, Molding apparatus, Presses, Tablet, Stationary mold.
- 31—TOBACCO, subclasses 9, Molding cigars, and 14, Plug-making.
21. MOLDING DEVICES, DIPPING. Apparatus for molding articles by immersing the mold, usually in the form of a core, pin, or cord, in the liquid material, withdrawing the mold coated with the material, and removing the article from the mold, except in the case of candles, where the wick which acts as a mold is retained in the complete article.
- Note.—Where the object is merely coating instead of making and molding an article, the patents are classified in class 91, COATING.
25. MOLDING DEVICES, DIPPING, CAPSULE-MACHINES. Machines for making medicinal capsules under the restrictions of subclass 24 above.
- Note.—Machines for coating and wiping capsule-molds are in subclass 31, Molding devices, Mold wiping and coating.
- Note.—Machines for making capsules by shaping sheet material will be found in other subclasses in this class.
- Note.—Molds for dipping capsules will be found in subclass 41, Molding devices, Molds, Dipping.
- Note.—Machines for filling capsules and joining the halves together are in class 128, SURGERY, subclass 32, Capsule-machines.
26. MOLDING DEVICES, CASTING. Molding apparatus in which the material is introduced in a liquid or semiliquid condition, takes its form (usually by gravity) without the application of pressure, and hardens or solidifies upon cooling, evaporation of the liquid, or the like and not classifiable in the other subclasses under this title. May include means for removing the article from the mold.
- Note.—Casting plants are in subclass 4, Molding plants.
- Search Classes—
- 22—METAL-FOUNDING, subclass 57, Casting apparatus, and subclasses thereunder.
- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 27, Depositing apparatus, subclasses thereunder, and 52, Implements, Depositors.
27. MOLDING DEVICES, CASTING, CANDLES. Apparatus for casting candles, including operating and coating wicks. Apparatus for molding candles in other ways and mere candle-molds are elsewhere classified in this class.
- Note.—Candle-finishing apparatus, unless involving some molding operation, is included in class 87, OILS, FATS, AND GLUE, subclass 3, Candle apparatus.
- Search Class—
- 18—PLASTICS, subclasses 24, Molding devices, Dipping, and 39, Molding devices, Molds, Casting.
28. MOLDING DEVICES, CASTING, CRAYONS. Apparatus for casting crayons.
- Note.—Mere molds for casting crayons are in subclass 39, Molding devices, Molds, Casting, in this class.
29. MOLDING DEVICES, CASTING, ROLLERS. Apparatus for casting printing and other rollers.
- Note.—Performing operations on printing-rollers after removal from the mold is included in class 101, PRINTING, subclass 73, Inking apparatus, Composition rollers, Preserving.
- Note.—For mere molds for casting rollers search in this class, subclass 39, Molding devices, Molds, Casting.
- Search Class—
- 22—METAL-FOUNDING, appropriate subclasses.
30. MOLDING DEVICES, CHARGERS. Devices for charging molds. Machines including both charging and molding devices are placed in the proper subclass above and cross-referenced into this subclass; but those in which the same means forces material into the mold and compresses it there and combinations of charger with mold are included here.
- Search Classes—
- 18—PLASTICS, subclasses 12, Molding devices, Die-expressing, and subclasses thereunder; 15, Molding devices, Film-spreading, and 29, Molding devices, Casting, Rollers.
- 17—BUTCHERING, subclass 6, Sausage-machines.
- 22—METAL-FOUNDING, subclasses 35, Molding apparatus, Charging flask; 40, Molding apparatus, Packing sand; 67, Casting apparatus, Compression, and subclasses under each of these.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 103, Block-presses, Chargers.
- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 17, Molding apparatus, Presses, Tablet; 27, Depositing apparatus, and subclasses under each of these.

CLASS 18—Continued.

31. MOLDING DEVICES, MOLD WIPING AND COATING. Devices for wiping or coating molds before or after molding. When in combination with molding or casting apparatus, patents are classified in the proper subclasses above and cross-referenced into this subclass.

Search Classes—

- 22—METAL-FOUNDING, subclass 88, Mold coating and lining apparatus.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 116, Sanders, Mold, and 117, Sanders, Mold, Rotary-drum.
- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 17, Molding apparatus, Presses, Tablet.
- 204—ELECTROCHEMISTRY, subclasses 7, Electrolysis, Aqueous bath, Cathodes, Cleaning, and 8, Electrolysis, Aqueous bath, Cathodes, Metallizing.
32. MOLDING DEVICES, FLASKS AND CLAMPS. Receptacles, for holding molds, usually of plastic material, which are to be used for molding or vulcanizing, and clamps therefor. Also includes combinations of flask or clamp with the mold.
- Search Classes—
- 18—PLASTICS, subclasses 7, Molding devices, Heating and vulcanizing, Pots, and 33, Molding devices, Flasks and clamps, Dental.
- 22—METAL-FOUNDING, subclass 96, Flasks, and subclasses thereunder.
- 144—WOODWORKING, subclass 297, Clamps, Portable.

33. MOLDING DEVICES, FLASKS AND CLAMPS, DENTAL. Flasks and flask-clamps for vulcanizing dental plates.

Search Class—

- 18—PLASTICS, subclasses 7, Molding devices, Heating and vulcanizing, Pots, and 32, Molding devices, Flasks and clamps.
34. MOLDING DEVICES, MOLDS. Molds, not embodying means for manipulating or compressing the material, not otherwise classifiable.
- Search Classes—
- 18—PLASTICS, subclass 32, Molding devices, Flasks and clamps; also, all the subclasses under the above title of Molding devices, Molds.
- 22—METAL-FOUNDING, subclass 113, Molds, and subclasses thereunder.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 3, Electrical-fixture machines; 4, Knob-machines; 6, Tobacco-pipe machines; 7, Soap-molding devices; 44, Block-molding machines, Undercutting, and 118, Molds, and the subclasses thereunder.
- 31—DAIRY, subclass 25, Butter workers and molds.
- 32—DENTISTRY, subclass 6, Molds.
- 49—GLASS, subclass 72, Molds, Pressing, and subclasses thereunder.
- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 19, Molding apparatus, Molds; and 48, Implements, Ice-cream dishes.

35. MOLDING DEVICES, MOLDS, SHEET-SHAPING. Molds for embossing sheets of plastic material.

Search Classes—

- 18—PLASTICS, subclasses 10, Molding devices, Presses, Sheet-shaping; 34, Molding devices, Molds; 36, Molding devices, Molds, Blank covering and filling; 37, Molding devices, Molds, Blank covering and filling, Lacing hooks and studs; 46, Molding devices, Molds, Cores, Boot trees and lasts, and 56, Processes, Molding, Sheets.
- 93—PAPER MANUFACTURES.
- 198—MATRIX-MAKING, subclass 2, Dies.
- 223—APPAREL APPARATUS, subclasses 21, Hat-machines, Blocks, and 31, Hat-machines, Shapers.
36. MOLDING DEVICES, MOLDS, BLANK COVERING AND FILLING. Molds provided with means for supporting a blank and adapted to cover or fill it with plastic material, except to make lacing studs and hooks.

Search Classes—

- 18—PLASTICS, subclass 59, Processes, Molding, Uniting.
- 22—METAL-FOUNDING, subclasses 116, Molds, Composite castings and joints, and subclasses thereunder.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 38, Pipe-machines, Plastic lining and coating.
- 32—DENTISTRY, subclass 6, Molds.
- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 1, Composite cake and confection apparatus.
- 215—BOTTLES AND JARS, subclass 111, Bottles, Necks, Stoppers, Plastic.
37. MOLDING DEVICES, MOLDS, BLANK COVERING AND FILLING, LACING HOOKS AND STUDS. Molds, under the restrictions of subclass 36 above, for covering lacing stud and hook blanks.

38. MOLDING DEVICES, MOLDS, HEATING AND VULCANIZING. Molds combined with heating means forming part of the mold. Molds simply intended to be placed in an oven and heated are not included.

39. MOLDING DEVICES, MOLDS, CASTING. The element of a casting device that gives form to the body being cast.

Search Classes—

- 18—PLASTICS, subclasses 40, Molding devices, Molds, Casting, Soap, and 58, Processes, Molding, Casting and dipping.
- 22—METAL-FOUNDING, subclass 113, Mold, and subclasses thereunder.

CLASS 18—Continued.

- 32—DENTISTRY, subclass 6, Molds.
- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 19, Molding apparatus, Molds.
- 127—SUGAR AND SALT, subclass 6, Cube sugar, and subclass 12, Molds and carriages.
40. MOLDING DEVICES, MOLDS, CASTING, SOAP. Molds for casting soap blocks and cakes, as per definition of subclass 39, Molding devices, Molds, Casting.
- Note.—Devices for molding soap in a plastic state are classified in class 25, PLASTIC BLOCK AND EARTHENWARE APPARATUS, under the group entitled Soap-molding devices.
41. MOLDING DEVICES, MOLDS, DIPPING. Molds to be used for dipping, as per definition of subclass 24, Molding devices, Dipping, usually in the form of a pin or core.
- Search Class—**
18—PLASTICS, subclass 45, Molding devices, Molds, Cores.
42. MOLDING DEVICES, MOLDS, TWO AND THREE PART. Molds in which the mold-cavity is formed entirely of not more than three pieces. In a two-part mold there may be only one core, and that consisting of one piece, except when a plurality of separate cores is attached to a single element and all the cores are necessarily operated by it. Several mold-cavities may be shown in one structure, provided each one satisfies these conditions.
- Search Classes—**
18—PLASTICS, subclasses 32, Molding devices, Flasks and clamps; 33, Molding devices, Flasks and clamps, Dental; 35, Molding devices, Molds, Sheet-shaping; 36, Molding devices, Molds, Blank covering and filling; 37, Molding devices, Molds, Blank covering and filling, Lacing hooks and studs; 38, Molding devices, Molds, Heating and vulcanizing; 39, Molding devices, Molds, Casting, and 43, Molding devices, Molds, Clamping.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 7, Soap-molding devices; 24, Pottery-machines, Jiggers; 119, Molds, Block; 120, Molds, Block, Ejectors, and 129, Molds, Pottery.
- 31—DAIRY, subclasses 21, Cheese-hoops, and 25, Butter workers and molds.
- 32—DENTISTRY, subclass 6, Molds.
- 53—DOMESTIC COOKING VESSELS, subclass 10, Waffle irons.
- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 19, Molding apparatus, Molds, and 48, Implements, Ice-cream dishes.
- 127—SUGAR AND SALT, subclass 6, Cube sugar, and subclass 12, Molds, and carriages.
- 131—TOBACCO, subclass 9, Molding cigars.
43. MOLDING DEVICES, MOLDS, CLAMPING. Devices for clamping or holding together the parts of molds comprising more than a simple screw or dowel-pin, but not amounting to a press.
- Search Classes—**
18—PLASTICS, subclass 40, Molding devices, Molds, Casting, Soap.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 119, Molds, Block; 120, Molds, Block, Ejectors, and 126, Molds, Pipe.
- 131—TOBACCO, subclass 9, Molding cigars.
44. MOLDING DEVICES, MOLDS, DIES, AND MATRICES. Dies or matrices not combined with other parts of the mold. They may be constructed in several pieces so long as they form only one die or matrix.
- Note.—Dies for shaping by expressing are classified in this class, subclass 12, Molding devices, Die-expressing, and subclasses thereunder.
- Search Classes—**
31—DAIRY, subclass 25, Butter workers and molds.
- 33—PAPER MANUFACTURES, subclass 59, Box-machines, Mandrels and dies.
- 181—ACOUSTICS, subclass 16, Graphophones, Tablets, Duplicating devices.
- 198—MATRIX-MAKING, subclasses 2, Dies, and 7, Matrices and materials.
45. MOLDING DEVICES, MOLDS, CORES. Cores to be used in the mold, but not combined with any other part of the mold.
- Search Classes—**
18—PLASTICS, subclasses 41, Molding devices, Molds, Dipping, and 46, Molding devices, Molds, Cores, Boot trees and lasts.
- 22—METAL-FOUNDING, subclass 165, and subclasses thereunder.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 22, Pottery-machines; 44, Block-molding Machines, Undercutting; 124, Molds, Cistern; 128, Molds, Pipe, Cores, and 130, Molds, Sarcophagi and tank.
- 92—PAPER-MAKING AND FIBER LIBERATION, subclasses 59, Pulp molding; 66, Pulp molding, Winders, and 67, Pulp molding, Winders, Sheet and board forming.
- 93—PAPER MANUFACTURES, subclass 59, Box-machines, Mandrels and dies.
46. MOLDING DEVICES, MOLDS, CORES, BOOT TREES AND LASTS. Boot trees and lasts for vulcanizing rubber boots and shoes.
- Search Class—**
12—BOOT AND SHOE MAKING, subclass 116, Boot-trees, and the subclasses thereunder.
47. MOLDING DEVICES, MOLDS, MATERIALS. Materials and compositions for making and coating molds used in this art.
- Search Classes—**
22—METAL-FOUNDING, subclasses 188, Mold and core materials, and 189, Mold and core materials, Coatings and linings.

CLASS 18—Continued.

- 23—CHEMICALS, subclass 11, Packing chemicals.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 122, Molds, Block, Linings.
- 131—TOBACCO, subclass 9, Molding cigars.
- 181—ACOUSTICS, subclass 16, Graphophones, Tablets, Duplicating devices.
- 198—MATRIX-MAKING, subclass 7, Matrices and materials.
- 47.5 PROCESSES, COMBINED. Combinations not otherwise provided for of operations characteristic of this class with other operations, as dyeing or impregnating, which do not alter the essential character of the product. Conventional reference to such operations as hardening, working, drying, polishing, cutting, or coating does not throw a patent into this subclass, nor does the denitration of nitrocellulose nor the application of specific substances to caoutchouc articles to prevent cohesion.
48. PROCESSES, MISCELLANEOUS. Processes for working plastic materials other than pyroxylin, vulcanizable gums, and their compounds and involving other operations than molding, uniting, and heating, or facing.
- Search Class—**
18—PLASTICS, subclasses 1, Miscellaneous apparatus; 49, Processes, Miscellaneous, Vulcanizable gums, and 50, Processes, Miscellaneous, Vulcanizable gums, Caoutchouc.
49. PROCESSES, MISCELLANEOUS, VULCANIZABLE GUMS. Miscellaneous processes for preparing and treating vulcanizable gums, except caoutchouc. Does not include molding, vulcanizing, or restoring, except in combination with other processes.
- Search Class—**
18—PLASTICS, subclasses 50, Processes, Miscellaneous, Vulcanizable gums, Caoutchouc; 52, Processes, Restoring caoutchouc, and 53, Processes, Vulcanizing caoutchouc.
50. PROCESSES, MISCELLANEOUS, VULCANIZABLE GUMS, CAOUTCHOUC. Miscellaneous processes for preparing and treating caoutchouc. Does not include molding, vulcanizing, or restoring, except in combination with other processes.
- Search Class—**
18—PLASTICS, subclasses 2, Miscellaneous apparatus, Vulcanizable gums; 6, Molding devices, Heating and vulcanizing; 49, Processes, Miscellaneous, Vulcanizable gums; 52, Processes, Restoring caoutchouc, and 53, Processes, Vulcanizing caoutchouc.
- 50.5 PROCESSES, IMITATING MARBLE. Involving the production of a veining, mottling, or similar effect upon or throughout a plastic product by a plastic operation.
- Search Classes—**
18—PLASTICS, subclass 61, Processes, Facing type, Design, for certain processes of producing a design upon the surface of a plastic product.
- 91—COATING, for processes of coating glass, matured brick, blocks, boards, metal, or the like in imitation of marble, but without the employment of a molding operation.
- 106.—PLASTIC COMPOSITION, for compositions resembling marble by reasons of the mere mixing of named ingredients.
51. PROCESSES, MISCELLANEOUS, PYROXYLIN. Miscellaneous processes of treating pyroxylin and its plastic compositions (celluloid) as per definition of subclass 3, Miscellaneous apparatus, Pyroxylin. Does not include mere molding and shaping.
- Note.—Viscose and other unnitrate cellulose compositions will be found in subclass 48, Processes, Miscellaneous.
- Search Class—**
18—PLASTICS, subclasses 3, Miscellaneous apparatus, Pyroxylin, and 54, Processes, Filament-forming.
52. PROCESSES, RESTORING CAOUTCHOUC. Processes for restoring old gums and scrap fabrics, including devulcanizing.
- Search Class—**
18—PLASTICS, subclass 2, Miscellaneous apparatus, Vulcanizable gums.
53. PROCESSES, VULCANIZING CAOUTCHOUC. Processes for vulcanizing gums. Includes preparation of the sulfur, mixing it with gums, and treating it in any way to effect or affect the vulcanization, but does not include processes in which the step of vulcanizing is merely included broadly.
- Search Class—**
18—PLASTICS, subclasses 2, Miscellaneous apparatus, Vulcanizable gums, and 6, Molding devices, Heating and vulcanizing.
54. PROCESSES, FILAMENT-FORMING. Processes of forming continuously filaments or threads, such as artificial silk or hair, from plastic materials. May include in combination with the forming of the filaments any other operations—such as spinning, twisting, drawing the filaments, making and preparing the plastic material, etc.—provided that these operations are properly included in this class according to its definition. Does not include processes of die-expressing and coating to obtain short lengths.
- Note.—Processes of making electric-light filaments, including carbonizing, flashing, and other operations limited to that art, are in class 176, ELECTRIC LAMPS.
- Search Classes—**
18—PLASTICS, subclass 8, Molding devices, Filament-forming.
- 176—ELECTRIC LAMPS, subclass 4, Manufacture and repair, Composition, and subclasses under Filament and glower composition.

CLASS 18—Continued.

55. **PROCESSES, MOLDING.** Processes of molding not otherwise classifiable involving no operations except uniting and those designated above as molding operations. Combinations of molding plastic masses and sheet-shaping are included.

Search Classes—

- 18—**PLASTICS**, subclasses 54, Processes, Filament-forming, and 59, Processes, Molding, Uniting.
 22—**METAL-FOUNDING**, subclass 193, Molding, and subclasses thereunder.
 25—**PLASTIC BLOCK AND EARTHENWARE APPARATUS**, subclass 1, Miscellaneous.
 32—**DENTISTRY**, subclasses 4, Mechanical; 6, Molds.
 107—**BREAD, PASTRY, AND CONFECTION MAKING**, subclass 54, Processes.
 181—**ACOUSTICS**, subclass 16, Graphophones, Tablets, Duplicating devices.
 198—**MATRIX-MAKING**, subclasses 2, Dies, and 7, Matrices and materials.
56. **PROCESSES, MOLDING, SHEETS.** Processes of embossing sheets of plastic material. Does not include coating blanks with sheets.
- Search Classes—**
 18—**PLASTICS**, subclasses 10, Molding devices, Rolling, Sheets; 19, Molding devices, Presses, Sheet-shaping; 35, Molding devices, Molds, Sheet-shaping, and 59, Processes, Molding, Uniting.
 144—**WOODWORKING**, subclass 277, Wood-ornamenting, Processes.

57. **PROCESSES, MOLDING, FILM-SPREADING.** Processes for making thin sheets of filaments by spreading it or flowing the liquid or semiliquid material upon a plane or other surface, no other mold being employed.

Search Class—

- 18—**PLASTICS**, subclasses 15, Molding devices, film-spreading; 24, Molding devices, Dipping; 25, Molding devices, Dipping, Capsule-machines; 41, Molding devices, Molds, Dipping, and 58, Processes, Molding, Casting and dipping.

58. **PROCESSES, MOLDING, CASTING AND DIPPING.** Processes of molding in which the material in a liquid or semiliquid condition takes its form (usually by gravity or by dipping) without the application of pressure and hardens or solidifies upon cooling, evaporation, or the like, and not used to produce films, as per subclass 57, Processes, Molding, Film-spreading.

Search Class—

- 18—**PLASTICS**, subclasses 15, Molding devices, Film-spreading; 24, Molding devices, Dipping; 25, Molding devices, Dipping, Capsule-machines; 26, Molding devices, Casting, and the subclasses thereunder; 39, Molding devices, Molds, Casting; 40, Molding devices, Molds, Casting, Soap; 41, Molding devices, Molds, Dipping, and 57, Processes, Molding, Film-spreading.

CLASS 18—Continued.

59. **PROCESSES, MOLDING, UNITING.** Processes, except as noted below, of molding and at the same time uniting two or more substances, at least one of which is plastic. Does not include uniting by casting or mere coating operations, but does include the embedding of solids during the formation of objects from plastic material while such material is green, or the application of a backing of plastic material to solids, whether or not the latter be arranged to form a design upon the face of the resultant product, as in the making of decorative tiles or mosaic-covered forms, and includes also the forming of a facing from plastic material upon any solid substance by a process which involves the molding of the plastic material.

Search Classes—

- 18—**PLASTICS**, subclasses 36, Molding devices, Molds, Blank covering and filling; 37, Molding devices, Molds, Blank covering and filling, Lacing hooks and studs, and 58, Processes, Molding, Casting, and Dipping.
 25—**PLASTIC BLOCK AND EARTHENWARE APPARATUS**, subclass 154, Processes, Reinforcing and Finishing, for processes of reinforcing or finishing in the formation of objects from clay or concrete by the use of a mold or die.
 32—**DENTISTRY**, subclasses 4, Mechanical, and 6, Molds.
 154—**LAMINATED FABRIC AND ANALOGOUS MANUFACTURES**, for certain processes of uniting self-sustaining sheets, processes of making hose, and processes of making pneumatic tires.
60. **PROCESSES, FACING TYPE.** Processes of forming a facing upon a given plastic product or of applying a backing of plastic material to a prepared facing material, excepting processes in which the facing material consists of formed solids or fragments or in which a marbling effect or a design is produced and excepting processes of producing a neat face upon concrete blocks without the addition of special facing materials.

Search Classes—

- 18—**PLASTICS**, subclass 50.5, Processes, Imitating marble, for processes of producing a veining, mottling, or like effect involving a plastic operation.
 25—**PLASTIC BLOCK AND EARTHENWARE APPARATUS**, subclass 154, Processes, Reinforcing and finishing, for processes of producing a neat face upon concrete blocks without the addition of special facing materials.
 91—**COATING**, for processes of coating products previously perfected by firing or the like.
61. **PROCESSES, FACING TYPE, DESIGN.** Processes of producing designs other than mere relief or intaglio upon green plastic material otherwise than by embedding of solids to constitute such facings and by processes not necessarily dependent upon an artist's skill.
- Search Classes—**
 18—**PLASTICS**, subclasses 50.5, Processes, Imitating marble, for processes of producing a veining or marble effect through or upon plastic material; 59, Processes, Molding, Uniting, for processes of inserting formed solids into a plastic composition.
 41—**ORNAMENTATION**, for such processes of decorating plastic material as are necessarily dependent upon an artist's skill or upon the use of transfers.

CLASS 20.—WOODEN BUILDINGS.

DEFINITIONS.

Class.

Wooden buildings, general form and arrangement of buildings, and such accessories as are found in building construction generally; also, scaffolds used in connection with building construction. Iron structures, Masonry, Tents, Roofs, Bridges, and Fences, are elsewhere classified.

Subclasses.

1. BUILDINGS. Structures and accessories peculiar to building which do not clearly fall in any of the other building classes or subclasses.
- 1.1. BUILDINGS, PLANS. Inventions of general application relating to the form, arrangement, and disposition of the parts of a building as shown in architectural designs.
- 1.11. BUILDINGS, APARTMENTS. Structures not otherwise provided for, designed to economize space in habitations other than by the arrangement and disposition of the parts of the building. Includes special modifications of parts of the building structure in combination with furniture, and special modification of building structure to adapt it to receive furniture.
- 1.12. BUILDINGS, AUDITORIUMS. Buildings specialized to accommodate assemblages of persons and such accessories thereof as are not otherwise classifiable.
- 1.13. BUILDINGS, STORAGE. Buildings such as warehouses and exhibition buildings and accessories, not otherwise classifiable, specially adapted to contain commodities.
- 1.2. BUILDINGS, BINS. Structures particularly adapted for storing solid materials, such as grain, ore, ensilage, etc.
Search Classes—
72—MASONRY AND CONCRETE STRUCTURES, subclasses 5, Buildings, Storage, and 6, Buildings, Elevators and bins.
98—PNEUMATICS, subclasses 26, Ventilation, Grain, and 27, Ventilation, House, for inventions in bins which include means for ventilating the same.
130—THRASHING, subclass 14, Granaries and bins, for inventions in bins which include an arrangement of the bin and material handling devices designed to mix the material stored.
189—METALLIC BUILDING STRUCTURES, subclass 3, Buildings, Bins.
193—CONVEYERS, subclass 20, Storehouse, for bins having conveying mechanism for filling and discharging combined therewith.
- 1.4. BUILDINGS, BINS, SILOS. Bins for the storage of green fodder which include arrangements designed to facilitate removal of material from the top and to exclude light and air on the sides and bottom.
Search Classes—
99—PRESERVING, subclass 8, Exclusion of air, for processes of preserving ensilage.
100—PRESSES, subclass 57, Packing, Single compression, for silos including means for packing and compressing the ensilage.
217—WOODEN RECEPTACLES, subclass 4, Tanks, for inventions relating solely to stave and hoop constructions. In some instances a complete silo structure is shown.
220—METALLIC SHIPPING AND STORING VESSELS, subclass 124, Tank-closures.
2. BUILDINGS, PORTABLE HOUSES. Knockdown, folding, or separable houses adapted to be readily moved and again set up.
3. BUILDINGS, PORTABLE HOUSES, VOTING-BOOTHES. Small collapsible houses for voting purposes.
Search Class—
135—TENTS, CANOPIES, UMBRELLAS, AND CANES, subclasses 3, Tents, Frames, and 4, Tents, Frames, Folding.
- 3.5. BUILDINGS, PORTABLE HOUSES, TELEPHONE-BOOTHES. Small movable houses or cabinets used in telephoning to secure greater privacy in communication.
4. WALL CONSTRUCTION. Miscellaneous building walls; arrangements to secure air-spaces; protective linings and air-stops; also, built-up cell-walls.
Search Class—
72—MASONRY AND CONCRETE STRUCTURES, subclass 33, Walls, Wood and plastic, for inventions involving combined wood and mortar, brick, or other masonry; also where fiber is compressed into brick-like form.
5. WEATHERBOARDING. Construction of the edges whereby the boards lap or interlock.

CLASS 20—Continued.

6. FLOORS, MISCELLANEOUS. Various forms of flooring which do not clearly fall in any of the other subclasses of flooring.
Search Class—
94—PAVING, subclass 8, Pavements, Wood.
7. FLOORS, COMPOSITE. Composition, felt, or other fibrous strips between or under the boards to make a water-tight floor. Coatings over floor to make smooth, preserve, or protect the floor.
Search Class—
94—PAVING, subclass 8, Pavements, Wood.
8. FLOORS, INTERLOCKING. The meeting edges or ends of the boards are modified so as to interlock or to receive an interlocking device, usually a strip.
9. FLOORS, JOIST-BRIDGING. Joist-bridges of various kinds, mostly metal.
10. STAIRS. Newels, balusters, steps, knockdown spiral stairs, winter hand-rails, joints, brackets, etc.
Search Class—
189—METALLIC BUILDING STRUCTURES, subclasses 43, Stairs, and 44, Stairs, Spiral, for combined features of wood and iron stairs.
11. DOOR AND WINDOW FRAMES. Features of frame construction purely, excluding forms of frames which cooperate with particular forms of sash.
12. DOOR AND WINDOW FRAMES, MOVABLE JAMBS. Frames in which sections of the jambs, heads, sills, or beads are movable, removable, or adjustably mounted.
13. LATHING. Various kinds of lath and various surfaces grooved or otherwise adapted to receive plaster.
Search Class—
72—MASONRY AND CONCRETE STRUCTURES, subclass 116, Reinforcing elements, Lathing, and subclasses thereunder.
14. LATHING, LATH-HOLDERS. Frames to hold a series of lath in proper position while the entire series is nailed before the frame is removed. Brackets adapted to be attached to the building or to the body of the mechanic to temporarily support a bundle of lath within convenient reach.
15. PANELS AND WAINSCOTING. Construction of ornamental panels of nonmetallic materials, except inlaid or mosaic panels, and methods of joining or attaching wainscoting to walls.
16. DOORS, MISCELLANEOUS. Doors that do not clearly fall in the other subclasses.
Note.—Constructions involving novel features common to the subclasses of doors, hangers, and gate-openers are placed with doors. Devices for opening and closing doors when not involved in the construction of the door or frame are in class 39, FENCES, subclasses 91 to 97, Gates, Openers. The hangers, rails, guide-rollers, and brackets when not involved in the construction of the door or its framing are in class 16, BUILDERS' HARDWARE, subclass 7 et seq., Door-Hangers, etc.
17. DOORS, OPPOSITELY-HINGED. Doors adapted to swing from either edge.
18. DOORS, ROTATING. Doors that are adapted to revolve on a vertical pivot like a turnstile.
Search Class—
39—FENCES, subclass 99, Gates, Turnstiles.
19. DOORS, SLIDING, MISCELLANEOUS. Sliding doors which do not clearly fall in any of the other subclasses.
20. DOORS, SLIDING, JOINTED. Doors made up of jointed sections adapted to be slid out of the way and folded or rolled up or slid into a casement at an angle to the plane of the door-frame.
21. DOORS, CAR, MISCELLANEOUS. Non-sliding doors, some fastenings, mountings, and double doors with outward swing on horizontal pivots.
22. DOORS, CAR, SLIDING, MISCELLANEOUS. Car doors that do not clearly fall in any of the other subclasses of sliding car-doors.
23. DOORS, CAR, SLIDING, LATERAL-MOVEMENT. Car doors that are adapted to permit a lateral movement out of or into the seat; some devices, cams, crank-arms, etc., for forcing the doors laterally into or out of the seat.

CLASS 20—Continued.

24. **DOORS, CAR, SLIDING, LATERAL-MOVEMENT, LINK-SUPPORT.** Car doors hung by a link support, so as to permit lateral movement to seat or unseat them at the car-opening. The devices for operating doors so suspended.
25. **DOORS, CAR, SLIDING, GUIDE-CLOSURES.** The guide, whether the rail or bracket, acts to close the door by forcing it into its seat, either by the inclination of the rail to the plane of the car, a wedge on the bracket, or a wedge on the door.
26. **DOORS, CAR, SLIDING, CLEATS.** Strips to close the opening between the edge of the door and the car to keep out rain, sparks, etc., when door is closed.
27. **DOORS, CAR, GRAIN, MISCELLANEOUS.** Car doors that do not clearly fall in any of the other subclasses of grain-doors.
28. **DOORS, CAR, GRAIN, HORIZONTAL-SWING.** Single, double, or sectional grain-doors which are hinged to swing horizontally outward or slide up a little and swing inward, or swing both outward and inward.
29. **DOORS, CAR, GRAIN, PIVOTED SIDE-TILT.** Car doors that have a single pivot at one side or one corner which may work in a slot at the end of a link or be fixed to permit the door on this pivot as a center to be tilted up sidewise to one side of the opening.
30. **DOORS, CAR, GRAIN, REMOVABLE.** Car doors that are removable bodily by pulling them up above guides, clips, cleats, or other fastener or by having a two-part door hinged in the center, so that it will yield outward and thus withdraw the edges from the cleats or other fasteners.
31. **DOORS, CAR, GRAIN, SIDE-SLIDE.** Car doors adapted to be slid to one side of the opening. Some are raised slightly or have one end so raised before sliding.
32. **DOORS, CAR, GRAIN, VERTICAL-SLIDE.** Car doors which slide in continuous guides upward and then pass beneath the roof. Door is usually made up of sections flexibly connected.
33. **DOORS, CAR, GRAIN, VERTICAL-SLIDE, PIVOTED-GUIDE.** Car doors adapted to slide upward on pivoted guides and then, together with the guides, be swung upward to be secured beneath the roof.
34. **DOORS, CAR, GRAIN, VERTICAL-SLIDE AND SWING.** Car doors that slide upward in fixed guides and then swing upward to be secured beneath the roof. Some few are also adapted to swing outward at the bottom.
35. **DOORS, DOOR CONSTRUCTION.** The construction of the door per se.
36. **DOORS, DOOR CONSTRUCTION, REMOVABLE PANEL.** Panels detachably secured in place, so that the door can be converted into either a screen, glass, or solid door.
37. **DOORS, CAR, DOOR CONSTRUCTION.** The structure of the car door itself, independent of any mountings, hangers, fasteners, or operating devices. Some removable panels, shutters, metallic doors, etc.
38. **DOORS, BRACES.** Metal braces, some inlaid, some at corners, and others along the edges of the door to correct or prevent warping.
39. **DOORS, WICKETS.** Doors having small apertures and the closures for same.
40. **WINDOWS, MISCELLANEOUS.** Forms of windows not classifiable in the special subclasses under windows and attachments for windows not properly classifiable under other classes, nor in other subclasses under windows.
- 40.5. **WINDOWS, CONDENSATION PREVENTING.** Windows provided with means for preventing accumulations of moisture or frost upon the panes.
Search Classes—
20—WOODEN BUILDINGS, subclass 56.5, Windows, parallel panes.
15—BRUSHING AND SCRUBBING, subclass 59, Window cleaners.
98—PNEUMATICS, subclass 32, Window ventilators, Condensation preventers, for the prevention of condensation on windows by ventilation.
134—LIQUID COATING COMPOSITIONS, subclass 27, Window frost preventive, for compositions and for coating window panes to prevent accumulations of frost.
41. **WINDOWS, CAR.** Windows especially designed for use in railway cars and in the cabs of locomotives and showing constructive features not in use on house windows.
42. **WINDOWS, SLIDING AND SWINGING SASH, MISCELLANEOUS.** Windows with sliding and swinging sashes not susceptible of proper classification in the special subclasses under sliding and swinging sash.
43. **WINDOWS, CORD-FASTENER PIVOT.** Sash-cord fasteners pivotally connected with the sashes and the sashes swing on these pivots. The point of attachment is generally near the middle of the side of the sash; but in some instances it is near the bottom or top of the sash.

CLASS 20—Continued.

44. **WINDOWS, GUIDE-ROD PIVOT.** Sashes attached at one side to guide-rods which are attached at top and bottom to the window-frame and on which the sashes swing.
45. **WINDOWS, HORIZONTALLY-PIVOTED FRAME, SLIDING-SASH.** A section of the stile on each side the frame is mounted on a pivot and the sashes swing with the pivoted stile-sections.
46. **WINDOWS, SEPARABLE-HINGE, SIDE SWING.** Separable hinge members are provided on sash and frame which are brought into engagement when it is desired to swing the sash out of the frame and which are disengaged when the sash is to slide in its guideways. The swing is in a horizontal plane.
47. **WINDOWS, SEPARABLE-HINGE, VERTICAL-SWING.** Separable hinge members are provided on sash and frame which are brought into engagement when it is desired to swing the sash out of the frame and which are disengaged when the sash is to slide in its guideways.
48. **WINDOWS, SLIDING-FRAME, VERTICALLY-PIVOTED SASH.** The sash proper is attached by vertical hinges or pivots to an auxiliary frame which slides in the main frame.
49. **WINDOWS, SLIDING-STILE, HORIZONTALLY-PIVOTED SASH.** Sashes connected by means of horizontal pivots with strips supported by the sash-cords and sliding in guideways of the frame. In some cases the sliding strips are connected by cross-pieces, which form with the strips an auxiliary frame.
50. **WINDOWS, SLIDING-STILE, VERTICALLY-PIVOTED SASH.** Sashes attached by vertical hinges or pivots to a sliding strip or stile which moves in guideways on the frame.
51. **WINDOWS, VERTICALLY-PIVOTED FRAME, SLIDING-SASH.** The sashes slide in an auxiliary frame which is hinged at the side to the frame proper and with which the sashes are carried when it is swung on its hinges.
52. **WINDOWS, SLIDING-SASH.** Sashes capable of sliding movement only and features of both frame and sash construction are involved.
53. **WINDOWS, SWINGING-SASH.** Windows whose sashes are capable of a swinging movement only, and hanging and operating devices for swinging sashes when claimed in combination with the structural features of the window.
54. **WINDOWS, SASHES, CUSHIONED.** Sashes provided with a spring-strip at one side or with a binding of yielding material.
55. **WINDOWS, STORM.** Sashes designed for attachment outside the ordinary window in stormy weather and readily detachable when not needed.
56. **WINDOWS, SASH CONSTRUCTION.** Features of sash construction which do not involve any modification of frame construction and which do not include any sash attachments other than those employed in holding the panes in position.
- 56.1. **WINDOWS, SASH CONSTRUCTION, REMOVABLE PANEL.** Sashes having frame panels detachably secured in place.
- 56.2. **WINDOWS, SASH CONSTRUCTION, SLIDING PANE.** Sashes in which the panes are slidable into and out of position.
- 56.3. **WINDOWS, CORNER POSTS AND MULLIONS.** Window mullion and corner constructions wholly or in part of wood.
- 56.4. **WINDOWS, PANE FASTENERS.** Devices consisting of strips, packings, frames, and fastenings other than glaziers' points for securing panes of glass in window frames or sashes.
- 56.5. **WINDOWS, PARALLEL PANES.** Windows or sashes having two or more panes opposite and approximately parallel.
Search Class—
20—WOODEN BUILDINGS, subclass 40.5, Windows, Condensation preventing.
57. **WINDOW-CRANES.** Devices which do not form part of the structure of the window proper, but which are attached to the frame and serve to swing the sashes out of their normal position and hold them in positions favorable for cleansing.
58. **SHUTTERS, MISCELLANEOUS.** Shutters that do not clearly fall in any of the other subclasses.
Note.—Iron shutters are under class 189, METALLIC BUILDING STRUCTURES, subclass 54, Shutters, and subclasses thereunder. Constructions involving novel features common to all shutters will be found in subclasses of Shutters in class 20, WOODEN BUILDINGS.
59. **SHUTTERS, AWNING.** Shutters adapted to be thrown outward at the bottom to serve also as an awning.
60. **SHUTTERS, REGISTERING SLIDE.** Shutters having a fixed grating and a sliding grating adapted to register therewith to cover or uncover the apertures in the fixed grating.
61. **SHUTTERS, SLIDING.** Shutters or shutter-sections adapted to slide in guides to cover or uncover the window. Some sections fold before sliding.

CLASS 20—Continued.

Search Class—

- 20—WOODEN BUILDINGS, subclasses 20, Doors, Sliding, Jointed; 32, Doors, Car, Grain, Vertical-Slide, and 52, Windows, Sliding-sash.
62. **SHUTTERS, SLATS, PIVOTED.** Shutters having the slats pivoted. The slat construction, its journals, slat-operating devices, and fasteners or locks for same.
63. **SHUTTERS, SLATS, FIXED.** Shutters having the slats fixed in the stiles. The slat construction and the means for securing it to the stiles.
64. **THRESHOLDS.** Door-sills of various forms designed for the most part to serve as weather-strips, being provided with drainage devices and in some cases cooperating with attachments to the door.
65. **WEATHER-STRIPS, HINGED.** Strips hinged or pivoted on a door or sash and thrown into operative or inoperative position by mechanism which is not spring-actuated.
66. **WEATHER-STRIPS, HINGED, SILLS.** Weather-strips hinged or pivoted to a door or window sill and provided with means for automatically bringing the strip into contact with the door or sash when the door or window is closed.
67. **WEATHER-STRIPS, HINGED, SPRING.** Hinged weather-strips thrown into operative or inoperative position by spring-actuated mechanism or held by spring-catches.
68. **WEATHER-STRIPS, SLIDING.** Weather-strips slidably mounted upon a door or window sash and provided with means for automatically throwing it into operative or inoperative position by opening or closing the door or window.
69. **WEATHER-STRIPS, PACKING.** Packing devices attached directly to windows or doors and not hinged or slidably mounted thereon.
70. **DOOR AND WINDOW TROUGHS.** Drip-troughs placed at the lower edge of doors or windows to catch the rain-water.
Search Class—
108—Roofs, subclass 28, Eaves-troughs.
71. **DOOR AND WINDOW GUARDS.** Various devices, including gratings, nursery-grates, etc., adapted to be detachably secured in door or window frames to prevent window-cleaners, children, or others falling out or to prevent unauthorized parties breaking in.
72. **DOOR AND WINDOW GUARDS, BODY-ATTACHED.** Various straps, belts, etc., adapted to be secured to the body and to the frame to prevent the window-cleaner from falling out.
73. **MANTELS.** Wooden house-mantels and mantels generally.
74. **MOLDINGS.** Ornamental strips of wood, metal, or some substitute thereof which are not designed especially for picture-frames and in which the invention is not confined to mere surface ornamentation; also, methods of cutting moldings and devices for hanging moldings.
Search Classes—
40—CARD, PICTURE, AND SIGN EXHIBITING, subclasses 12, Checks, Labels, and Tags, Holders, Cornice, and 152, Picture Frames, and subclasses thereunder.
144—WOODWORKING, subclasses 272 et seq., Wood-ornamenting.
75. **MOSAICS AND INLAYING.** Inlaid articles of wood, mosaic work, mortised blocks for floor-covering, and floor-covering fabric of wood blocks and cloth backing.
76. **CORNER-SHIELDS.** Small corner-plates to be placed in corners of rooms or stairs to keep dust out of the corner.
77. **CEILING-CENTERPIECES.** Various ornamental pieces, not plaster, adapted to be secured to the ceiling. Frames upon which paper can be hung. Some ornamental sheet-metal pieces.
78. **SLATTED FLOOR-COVERING.** Flexibly or rigidly united slats for floors of houses, cars, etc.
Note.—Door-mats of wire, other metal, wood or fiber, are under class 15, BRUSHING AND SCRUBBING, subclasses 62-64, Mats; Mats, Wire, and Mats, Metallic.
79. **STAIR-COVERS.** Various detachable pads and covers to protect the stairs or prevent slipping.
Note.—This class does not include stair-pads to go under carpets, or fireproof stair coverings.
Search Class—
20—WOODEN BUILDINGS, subclass 78, Slatted Floor-Covering.

CLASS 20—Continued.

80. **ABOLISHED.**
81. **SCAFFOLDS, MISCELLANEOUS.** Various sorts of builders' scaffolds which do not clearly fall in any of the other subclasses.
Search Class—
57—HOISTING, and 187, ELEVATORS, subclass 9, Portable, and subclasses thereunder.
82. **SCAFFOLDS, SWINGING.** Scaffolds adapted to be suspended from the sides or roof of a building.
Search Class—
228—LADDERS, subclass 20, Scaling.
83. **SCAFFOLDS, TRESTLES.** Various trestles or "scaffold-horses" for supporting boards or other platform for workmen.
84. **SCAFFOLDS, BRACKETS.** Brackets to be secured to the side of a building to support the boards or platform for the mechanics.
85. **SCAFFOLDS, BRACKETS, LADDER.** Detachable brackets or jacks to be hung upon a ladder to support the mechanic, his tools, mortar or other building material, or boards on which the mechanic may stand.
86. **SCAFFOLDS, BRACKETS, SHINGLING.** Scaffolds adapted to engage roof-shingles, so as to support the mechanic, his tools, or bundles of shingles upon the roof.
87. **SCAFFOLDS, WINDOW.** Window-supported platforms, chairs, and balconies, to be used for pleasure, for window-cleaning, or for painting.
88. **SCAFFOLDS, BINDERS.** Various metal clamps, chains, and binders for general use for temporarily supporting scaffolding.
Search Classes—
20—WOODEN BUILDINGS, subclasses 94, Joist Connections, and 95, Framing Sockets; 45, FURNITURE, subclass 48, Tables, leg fastening and bracing; 46, GAMES AND TOYS, subclass 33, Stilts; 144, WOODWORKING, subclass 289, Clamps, and subclasses thereunder; 214, LOADING AND UNLOADING, subclass 25, Load-Binders.
89. **VENEERING.** Thin sheets of wood or thin sheets of wood mounted on some backing fabric; methods of mounting veneers on lumber.
90. **COMPOSITE BOARDS.** Board composed of some plastic material in combination with fibrous or other filling material.
91. **COMPOUND LUMBER.** Lumber made up of sheets, strips, or blocks for ornamental purposes, except mosaics or inlaid work, or in order to utilize lumber waste.
92. **SPLICES AND JOINTS.** Various wood joints and splices for house and bridge work, box, window-screen and picture frames, metal clamps, corner-braces, dowel-pins, and timber seats.
Note.—Constructions to go in this subclass must be mere joints or splices capable of general application to wood structures.
Search Classes—
5—BEDS, subclass 55, Corner-fastenings.
21—CARRIAGES AND WAGONS, subclass 49, Spoke-sockets.
45—FURNITURE, subclasses 24, Fabric-stretching frames; 130, Fabric-stretching frames, Painters.
229—PAPER RECEPTACLES, subclass 49, Boxes, Stays.
93. **NAIL-HOLE PLUGS.** Wooden plugs to be placed in nail holes.
94. **JOIST CONNECTIONS.** Metallic joist hangers and anchors that are particularly adapted to be hung from or nailed to joists.
95. **FRAMING-SOCKETS.** Metallic devices designed to fit the tops of wooden posts or columns and support joists or the like.
96. **POST-BASES.** Bases, usually metallic, for wooden posts which usually include some feature to prevent the posts from rotting.
Search Class—
189—METALLIC BUILDING STRUCTURES, subclass 42, Columns, Caps and bases.
97. **WOODEN COLUMNS.** Wooden columns for use in structural work.
Note.—Metallic columns, metallic caps and bases therefor, and columns composed of wood and metal are classified in class 189, METALLIC BUILDING STRUCTURES.
Search Class—
20—WOODEN BUILDINGS, subclasses 89, Veneering; 92, Splices and joints; 95, Framing-sockets, and 96, Post-bases.

CLASS 22.—METAL-FOUNDING.

DEFINITIONS.

Class.

This class includes the entire art of casting all metals and alloys and is limited thereto. It includes the pouring of the metal, the introduction of it into the mold, and the treatment of the casting while in the mold and until the casting itself is produced as a casting.

It does not include the finishing of the casting in any way, heat-treating after the casting is taken from the mold as a complete casting nor the working of the metal, even when in combination with the casting, except in making type and stereotype-plates.

Machines which make a continuous product, provided the mold moves forward with the casting in its travel or a portion of its travel and then the mold parts are separated and returned to the point of pouring, are included in this class. Machines in which the metal moves through the mold or die are classified in class 207, PLASTIC METAL-WORKING.

Mixing the metal with other metals or materials is included only when this is done in the mold or during the process of pouring or introducing the metal.

The casting of stereotype-plates and of single type is included even when in combination with finishing mechanism. The finishing mechanism by itself is included in class 90, GEAR-CUTTING, MILLING, AND PLANING. Linotype machines and those machines which both cast and set the type are excluded from this class. See classes 199, TYPE-BAR MAKING, and 101, PRINTING, subclass 200, Setting and distributing, Setting, Making and setting.

This class also includes the manufacture of molds and cores for exclusive use in casting metals from sand, loam, and plastic materials generally and the treatment of such molds and cores to render them suitable for the purpose intended. See definition of subclass 87, Mold and core drying apparatus.

It does not include, however, the manufacture of molds from solid materials when capable of being classified in class 29, METAL-WORKING, class 125, STONE-WORKING, and analogous classes.

The manufacture of patterns is not included except when in combination with the production of the mold or casting, unless the pattern is made from plastic material. The manufacture of wooden patterns is included in class 144, WOODWORKING.

The manufacture of pattern plates is included, unless consisting merely of ordinary woodworking, metal-working, or other processes capable of classification in the functional classes.

Machines and implements for performing separate functions and capable of general use, when not in combination with foundry apparatus, are classified elsewhere—as, for example, sand-sifting screens are classified in class 83, MILLS, subclass 56, Ore and coal, Sifters and screens, and foundry-crane in class 212, CRANES AND DERRICKS.

The treatment of molding sand to render it especially applicable for making molds, as by tempering and moistening, is included in this class, but not when limited to crushing, sifting, or other functions capable of classification in the functional classes in the Office. Clamps which are adapted for use on flasks, but which have none of their members attached to the flask, are classified in class 144, WOODWORKING, subclass 297, Clamps, Portable, and the subclasses thereunder.

Subclasses.

1. MISCELLANEOUS. Apparatus properly included in this class, but including the performance of functions not capable of classification in any of the other subclasses. Apparatus for making molds for casting metals from non-plastic materials, like cuttlebone, are included here when not classifiable in other subclasses.

Search Classes—

22—METAL-FOUNDING, subclasses 3, Stereotype-casting apparatus, Combined machines, and 7, Type-casting apparatus, Combined machines.

18—PLASTICS, subclass 1, Miscellaneous apparatus.

2. STEREOTYPE-CASTING APPARATUS. Apparatus for casting stereotype-plates in which no other function is performed and which amounts to more than the mere mold.

Search Class—

22—METAL-FOUNDING, subclass 3, Stereotype-casting apparatus, Combined machines.

3. STEREOTYPE-CASTING APPARATUS, COMBINED MACHINES. Apparatus for casting stereotype-plates combined with finishing or other operations not separable from the casting.

Note.—Apparatus for finishing by cutting is classified in class 90, GEAR-CUTTING, MILLING, AND PLANING.

4. STEREOTYPE-CASTING APPARATUS, HEATING OR COOLING MOLDS. Apparatus for casting stereotype-plates provided with means for heating and cooling the molds.

5. STEREOTYPE-CASTING APPARATUS, MOLDS. Stereotype-molds not combined with means for moving any of the parts or for heating or cooling them.

6. TYPE-CASTING APPARATUS. Apparatus for casting single metal type not combined with any other operation except amounting to more than the mere mold.

Note.—Linotype-casting is classified in class 199, TYPE-BAR MAKING.

CLASS 22—Continued.

Search Classes—

22—METAL-FOUNDING, subclass 7, Type-casting apparatus, Combined machines.

101—PRINTING, subclass 200, Setting and distributing, Setting, Making and setting.

7. TYPE-CASTING APPARATUS, COMBINED MACHINES.

Type-casting machines in combination with apparatus for finishing or performing other operations not separable from the casting.

Note.—Finishing apparatus *per se* is classified in class 90, GEAR-CUTTING, MILLING, AND PLANING, subclass 25, Planing, Soft-metal.

Note.—The combination of casting and setting is classified in class 101, PRINTING, subclass 200, Setting and distributing, Setting, Making and setting, which should be searched.

8. TYPE-CASTING APPARATUS, MOLDS. Type-molds not combined with means for moving any of the parts.

Search Class—

22—METAL-FOUNDING, subclasses 6, Type-casting apparatus, and 7, Type-casting apparatus, Combined machines.

9. MOLDING APPARATUS. Miscellaneous apparatus for use

in making sand and loam molds for casting metal. Apparatus for making molds of non-plastic materials for casting metals are not included in this subclass, even if classifiable in the class. Under this head are included moving parts with means for moving them, either directly included or so described as to render the inference of their presence necessary. Those with parts movable by hand and not intended to be moved by mechanical means are not included. This subclass includes patents involving any of the operations classifiable in the subclasses hereunder when in combination with other molding operations not so classifiable.

Search Class—

18—PLASTICS, subclasses 10, Molding devices, Rolling, Sheets; 14, Molding devices, Die-expressing, Tube and hollow; 15, Molding devices, Film-spreading; 16, Molding devices, Presses; 20, Molding devices, Presses, Rotary mold-support, and 21, Molding devices, Presses, Rotary mold-support, Peripheral.

10. MOLDING APPARATUS, CORE-MAKING. Apparatus

for making cores in core-boxes and other ways, except by expressing through dies and applying the material to a rotating core-bar, comprising means for moving the parts, as distinguished from mere core-boxes which do not include such means. Machines which are adapted to be used for both core-making and mold-making are included. May include any molding operations in combination.

Search Classes—

18—PLASTICS, subclasses 12, Molding devices, Die-expressing, and 14, Molding devices, Die-expressing, Tube and hollow.

107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 14, Molding apparatus, Die-expressing.

11. MOLDING APPARATUS, CORE-MAKING, DIE-EX-PRESSING. Machines for making cores by forcing the material through a die.

12. MOLDING APPARATUS, CORE-MAKING, ROTATING

CORE-BAR. Machines for making cores by depositing and affixing the core material to a core-bar or mandrel capable of rotating and for shaping such material on a rotating core-bar or mandrel. Includes in combination means for supplying the material.

Search Class—

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 24, Pottery-machines, Jiggers.

13. MOLDING APPARATUS, CORE-MAKING, CORE-BOXES. Core-boxes not involving means for moving the parts or removing the cores or performing other operations except holding and shaping the core material.

Search Class—

22—METAL-FOUNDING, subclass 10, Molding apparatus, Core-making.

14. MOLDING APPARATUS, SCREW-THREADS. Apparatus for molding screws and other articles which have a helical thread or groove. They are usually provided with stripper-plates, but not necessarily. May include any function included in subclass 9, Molding apparatus.

15. MOLDING APPARATUS, CURVED MOLDS. Apparatus for molding curved pipes and other articles in which the molding progresses from one end to the other along a curve. Does not include the helical curves of subclass 14, Molding apparatus, Screw-threads. Does not include those in which curved pipe or other article is molded throughout its length simultaneously. Such machines being capable of general use are classified under the functional and structural subclasses.

Search Class—

49—GLASS, subclass 30, Molding, Curved pipes and tubes.

CLASS 22—Continued.

16. **MOLDING APPARATUS, PIPES VERTICAL.** Apparatus for molding pipes in a vertical position, whether they are to be cast in that position or not, when the entire operation of compacting the sand is not performed by the pattern itself.
17. **MOLDING APPARATUS, PIPES VERTICAL, COMPACTING PATTERN.** Apparatus for molding pipes in a vertical position by the compacting action of a traveling, but not a rotating, pattern.
18. **MOLDING APPARATUS, PIPES VERTICAL, COMPACTING PATTERN, ROTATING.** Apparatus for molding pipes in a vertical position by the compacting action of a rotating pattern or a non-rotating pattern and rotating flask. The pattern usually travels longitudinally. Includes improvements in such patterns when not capable of general use.
19. **MOLDING APPARATUS, PIPES VERTICAL, COMPACTING PATTERN, ROTATING, BEAD-FORMING.** Apparatus for forming beads at the ends of pipes by a rotating former or pattern.

20. **MOLDING APPARATUS, PLANTS.** Apparatus and plants for molding in which there is an alleged combination between mold making and manipulating machines. They are usually foundry plants embodying means for transferring the molds from the molding position to casting position. Casting is sometimes included in combination.

Search Classes—

- 22—METAL-FOUNDING, subclass 21, Molding apparatus, Rotating-table.
- 18—PLASTICS, subclass 4, Molding plants.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 2, Brick-making plants.
- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 3, Starch-molding apparatus.

21. **MOLDING APPARATUS, ROTATING TABLE.** Molding machines in which flask, mold, or pattern is carried around on a horizontal rotating table, with or without means for performing several operations. May include any molding operation. Mere turn-tables adapted to hold molds are included.

Search Classes—

- 22—METAL FOUNDING, subclass 63, Casting apparatus, Pigs, Rotating table.
- 18—PLASTICS, subclass 20, Molding devices, Presses, Rotary mold-support.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 2, Brick-making plants, and all subclasses under Block-presses, Rotary-mold, Facial.

22. **MOLDING APPARATUS, ROLLING-PATTERN.** Apparatus for molding in which the pattern has a rolling motion or is mounted upon the surface of a roller. This pattern also often acts to press the sand.

Search Class—

- 22—METAL FOUNDING, subclass 19, Molding apparatus, Pipes vertical, Compacting pattern, Rotating, Bead-forming.

23. **MOLDING APPARATUS, SEGMENTAL-PATTERN.** Molding apparatus in which a segment only of the pattern is used. The segment being placed in molding position, with the sand packed around it, is then withdrawn and placed in an adjacent position, so that a complete mold is formed by a series of these operations on the same segmental pattern. They are generally used for molding large gear-wheels.

24. **MOLDING APPARATUS, SWEEPING OR CUTTING.** Molding apparatus for forming molds by the operation of a moving sweep, strickle, or profile pattern. They are generally used in loam molding, and the sweep usually has a mere motion of rotation about a fixed spindle or center.

Search Classes—

- 22—METAL FOUNDING, subclass 12, Molding apparatus, Core-making, Rotating core-bar.
- 18—PLASTICS, subclass 5, Molding devices.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 24, Pottery-machines, Jiggers.

25. **MOLDING APPARATUS, PACKING AND DRAWING.** Machines for ramming or compressing sand and drawing the pattern after the mold is made, except those which can be included in the other subclasses under this head. May include in combination any of the operations separately classified under the heading "Molding apparatus," but not others.

26. **MOLDING APPARATUS, PACKING AND DRAWING, MOLD MOVING AGAINST PRESS-HEADS.** Machines for ramming and drawing in which the pattern, stripping-plate, or some other part or parts is forced against the press-head. The press-head is usually stationary above the flask during the operation, but may be movable between operations.

27. **MOLDING APPARATUS, PACKING AND DRAWING, PARTING SURFACE COMPRESSION.** Machines falling under the definition of subclass 25, Molding apparatus, Packing and drawing, in which the compression takes place upon the parting surface; in other words, in which the pattern or some part of the parting surface is forced into the sand, usually from below, and in which there is no stripping.

28. **MOLDING APPARATUS, PACKING AND DRAWING, PARTING SURFACE COMPRESSION, STRIPPING.** Machines otherwise falling under the definition of the last subclass, in which the stripping-plate is used in conjunction with the pattern. The pressure is frequently imparted by the stripping-plate.

CLASS 22—Continued.

29. **MOLDING APPARATUS, PACKING AND DRAWING, JARRING-MOLD AND STRIPPING.** Machines for ramming and drawing in which the ramming operation is performed by jarring—that is, dropping the flask containing the pattern and sand upon a jarring-block—and the drawing of the pattern is performed by lifting the stripping-plate, thus leaving the pattern outside the mold.

30. **MOLDING APPARATUS, PACKING AND DRAWING, PRESSING AND VIBRATING PATTERN.** Machines falling under the general definition of subclass 25, Molding apparatus, Packing and drawing, in which the drawing operation is facilitated or caused by imparting a vibratory movement to the pattern. Those in which there are devices for transmitting the vibrations to the pattern are included, even if not combined with means for producing vibrations. They are chiefly swinging-head presses.

31. **MOLDING APPARATUS, ASSEMBLING MOLD PARTS.** Apparatus for molding embodying means for assembling parts of the mold, as a cope and drag, and combined or not with means for performing other molding operations which are separately classified. Machines performing this function in combination with both ramming and drawing are not included, except as cross-references.

32. **MOLDING APPARATUS, INVERTING FLASK.** Molding-machines in which the flask is mounted upon the plate or other device, so that it can be reversed after molding. The mold is usually moved from the pattern or the pattern from the mold. Usually the two half-patterns are mounted on opposite sides of the pattern-plate, and the head is provided with supporting-trunnions. Do not necessarily include any mechanical means for inserting the parts. Such machines provided with means for both ramming and drawing are included under subclass 25, Molding apparatus, Packing and drawing.

33. **MOLDING APPARATUS, INVERTING FLASK, ROCK-OVER.** Machines falling under the definition of the last subclass in which the parts are rocked over upon a pivot or its equivalent placed at one side of the flask and usually wholly without the flask. They do not usually contain any means for performing the operation of rocking over except a handle. Usually the flask is rocked over to invert it, and then the pattern is rocked back to its original position to draw it.

34. **MOLDING APPARATUS, REMOVING MOLD.** Machines which are provided with means for removing the mold after molding. Sometimes the mold is mounted on a truck traveling on tracks, there being no other means for moving it. Those involving both ramming and drawing in combination are not included, except as cross-references.

Search Class—

- 22—METAL FOUNDING, subclasses 21, Molding apparatus, Rotating-table; 32, Molding apparatus, Inverting flask, and 33, Molding apparatus, Inverting flask, Rock-over.

35. **MOLDING APPARATUS, CHARGING-FLASK.** Machines for molding having means for delivering sand to the flask. This subclass does not include machines coming under the definition of ramming and drawing, but aside from that includes machines of various types. Includes mere charging without molding.

Search Class—

- 18—PLASTICS, subclass 30, Molding devices, Chargers.

36. **MOLDING APPARATUS, CHARGING-FLASK, UNDER PRESSURE.** Machines which deliver the sand to the flask with sufficient force for packing it in the flask, usually so that it will not require further compression. Does not include mere presses in which a false flask is used to hold the sand and through which it is forced into the flask.

Search Classes—

- 22—METAL FOUNDING, subclass 12, Molding apparatus, Core-making, Rotating core-bar.
- 18—PLASTICS, subclass 30, Molding devices, Chargers.

37. **MOLDING APPARATUS, CORE-SETTING.** Apparatus for use in molding embodying means for placing cores, core parts, or any interior molding parts in the molds or in parts of the molds, either in combination or not, with means for molding sprues, venting, packing, or drawing patterns. Machines involving this operation in combination with both ramming and drawing are not included, except as cross-references.

Note.—Sprue patterns or pins are classed in this class, subclass

162, Patterns, Sprue, gate, and runner.

39. **MOLDING APPARATUS, VENTING.** Molding-machines provided with means for forming vent-openings in the molds during or after molding, either in combination or not with packing or drawing, but not with both.

CLASS 22—Continued.

40. **MOLDING APPARATUS, PACKING SAND.** Machines limited to the function of ramming, packing, or compressing sand to make molds in which such functions are performed by other means than by a press, jarring device, or multiple rammer. Under this head are included mere combinations of flask and packing devices, even in the absence of means for moving either. Includes single-rammer machines, roller packing devices, and all combination packing-machines.

Search Class—

22—METAL-FOUNDING, subclasses 25, Molding apparatus, Packing and drawing, and 36, Molding apparatus, Charging-flask, Under pressure.

41. **MOLDING APPARATUS, PACKING SAND, MULTIPLE RAMMER.** Mold-packing devices in which the packing operation is performed by a plurality of rammers or plungers operating on a mold. Includes such devices whether they can properly be called presses or not.

42. **MOLDING APPARATUS, PACKING SAND, PRESSES.** Presses for packing sand in molding having a single rammer and not provided with a swinging press-head. Rolling devices are not included.

Search Classes—

22—METAL-FOUNDING, subclasses 21, Molding apparatus, Rotating-table; 25, Molding apparatus, Packing and drawing; 26, Molding apparatus, Packing and drawing, Mold moving against press-head; 27, Molding apparatus, Packing and drawing, Parting surface compression, and 28, Molding apparatus, Packing and drawing, Parting surface compression, Stripping.

18—PLASTICS, subclass 16, Molding devices, Presses.

107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 3, Starch-molding apparatus, and 15, Molding apparatus, Presses.

43. **MOLDING APPARATUS, PACKING SAND, PRESSES, SWINGING PRESS-HEAD.** Mold-ramming presses in which the press-head is capable of swinging over and away from the mold on pivots or their equivalent and the press-head has a motion against the mold for compressing, whether the mold also has an opposite motion or not.

Search Class—

22—METAL-FOUNDING, subclass 25, Molding apparatus, Packing and drawing.

44. **MOLDING APPARATUS, PACKING SAND, PRESSES, SWINGING PRESS-HEAD, RECIPROCATING-MOLD.** Mold-ramming presses in which the press-head is capable of swinging over and away from the mold on pivots or their equivalent and during the pressing operation is stationary, so that in compressing the mold the mold necessarily moves against the press-head.

Search Class—

22—METAL-FOUNDING, subclasses 26, Molding apparatus, Packing and drawing, Mold moving against press-head, and 30, Molding apparatus, Packing and drawing, Pressing and vibrating pattern.

45. **MOLDING APPARATUS, PACKING SAND, JARRING.** Machines for packing molds by a jarring operation, usually by lifting the flask containing the sand and pattern and allowing it to drop upon a jarring-block.

Search Class—

22—METAL-FOUNDING, subclass 29, Molding apparatus, Packing and drawing, Jarring-mold and stripping.

46. **MOLDING APPARATUS, PACKING SAND, PRESS-HEADS AND PLUNGERS.** Improvements limited to the press-head, plunger, or rammer, adapted to be attached to a mold-press or other packing device.

Note.—For hand-rammers see in this class, subclass 187, Molding-tools, Rammers.

Search Class—

22—METAL-FOUNDING, subclass 41, Molding apparatus, Packing sand, Multiple rammer.

47. **MOLDING APPARATUS, DRAWING PATTERN.** Machines for drawing the pattern or a part of the pattern from the mold after compression of the mold. This subclass includes inventions involving presenting the pattern to or into the mold or flask, but not when any compression or ramming of the sand is included. It does not include those in which the pattern is drawn by lifting the flask, the use of a stripping-plate, nor those in which the drawing of the pattern is facilitated by means forming part of the machine for rapping or vibrating the pattern, except in combination.

Search Classes—

22—METAL-FOUNDING, subclasses 25, Molding apparatus, Packing and drawing; 32, Molding apparatus, Inverting flask; 33, Molding apparatus, Inverting flask, Rock-over, and 56, Molding apparatus, Drawing pattern, Vibrating.

107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 3, Starch-molding apparatus.

48. **MOLDING APPARATUS, DRAWING PATTERN, MOLD-LIFTING.** Apparatus for separating the pattern from the mold by lifting the latter off the pattern, in which the pattern has no movement during the mold-lifting operation. Usually a stripping-plate carrying the flask and mold is lifted, and vibration may be included in combination.

Search Class—

22—METAL-FOUNDING, subclasses 29, Molding apparatus, Packing and drawing, Jarring-mold and stripping, and 33, Molding apparatus, Inverting flask, Rock-over.

CLASS 22—Continued.

49. **MOLDING APPARATUS, DRAWING PATTERN, MOLD-LIFTING, RECIPROCATING PATTERN.** Apparatus for separating the pattern from the mold by lifting the latter off the pattern, the pattern having a reciprocating motion during such operation or immediately before it. The motion of the pattern usually starts the mold-lifting devices. Stripping and vibrating may be included in combination.

Search Class—

22—METAL-FOUNDING, subclass 29, Molding apparatus, Packing and drawing, Jarring-mold and stripping.

50. **MOLDING APPARATUS, DRAWING PATTERN, STRIPPING.** Machines for drawing patterns from molds in which a stripping-plate is used to hold the sand while the pattern is being drawn and not capable of classification in any of the other subclasses under this head. The stripper is usually stationary, the pattern being drawn down through it. Vibration may be included in combination. Under this head are included so-called "patterns" which embrace means for drawing a part of the pattern within the main part of the pattern, but not those in which the projecting part is merely pivoted or otherwise made to permit it to be withdrawn inside the pattern, nor those with means for moving the projecting part so as to permit withdrawal of the pattern when not involving means for withdrawing any part of the mold.

Search Class—

22—METAL-FOUNDING, subclasses 14, Molding apparatus, Screw-threads; 28, Molding apparatus, Packing and drawing, Parting surface compression, Stripping; 29, Molding apparatus, Packing and drawing, Jarring-mold and stripping; 48, Molding apparatus, Drawing pattern, Mold-lifting, and 49, Molding apparatus, Drawing pattern, Mold-lifting, Reciprocating pattern.

51. **MOLDING APPARATUS, DRAWING PATTERN, STRIPPING, COMPOUND STRIPPING-PLATE.** Stripping-plate machines for drawing patterns from molds in which the stripping-plate is made up of two or more relatively movable parts, at least one of which usually forms a part of the pattern, and those in which a part of the pattern acts as a stripping-plate for another part and such mentioned part is drawn through a stripping-plate.

Search Class—

22—METAL-FOUNDING, subclass 28, Molding apparatus, Packing and drawing, Parting surface compression, Stripping.

52. **MOLDING APPARATUS, DRAWING PATTERN, STRIPPING, PARALLEL MOTION.** Machines for drawing patterns entirely by stripping in which the pattern is drawn by mechanism constructed to give equal and parallel motion to the pattern-plate at at least two points. Does not include those in which the force is applied at a single point and the pattern merely guided along parallel lines.

53. **MOLDING APPARATUS, DRAWING PATTERN, STRIPPING, CURVILINEAR DRAW.** Machines for drawing patterns through stripping-plates in longitudinally-curved lines.

Search Class—

22—METAL-FOUNDING, subclasses 14, Molding apparatus, Screw-threads; 15, Molding apparatus, Curved molds, and 33, Molding apparatus, Inverting flask, Rock-over.

54. **MOLDING APPARATUS, DRAWING PATTERN, STRIPPING, STOOL.** Stripping-plate machines for drawing patterns from molds in which a part of the stripping-plate takes the form of a "stool"—that is, a green-sand core is supported during the molding and likewise during the drawing of an outside part of the pattern by a stool or the like, which is usually within the pattern.

55. **MOLDING APPARATUS, DRAWING PATTERN, STRIPPING, LEVER AND LINK.** Machines for drawing patterns through stripping-plates which do not fall under any of the other subclasses under this head and in which the pattern is drawn entirely by means of combinations of levers and links, either or both.

Search Class—

22—METAL-FOUNDING, subclasses 51, Molding apparatus, Drawing pattern, Stripping, Compound stripping-plate, and 52, Molding apparatus, Drawing pattern, Stripping, Parallel motion.

56. **MOLDING APPARATUS, DRAWING PATTERN, VIBRATING.** Machines for drawing patterns from molds without lifting the mold or stripping the pattern, in which the operation is facilitated by means forming a part of the machine for vibrating or rapping the pattern, either before the drawing operation commences or after, and includes machines having devices adapted to be vibrated and to communicate vibrations to the pattern, even when no means for producing vibrations is included as a part of the invention.

Search Classes—

22—METAL-FOUNDING, subclass 30, Molding apparatus, Packing and drawing, Pressing and vibrating pattern.

107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 3, Starch-molding apparatus.

57. **CASTING APPARATUS.** Apparatus for casting metals not including any other function and containing matter not capable of classification in any of the other subclasses under this head. This subclass includes combination patents part of which, but not all, could be classed in other subclasses under this head, so long as they include nothing but casting the metal. Casting includes introducing the metal into the mold and treating it therein. The subclasses under this head in-

CLASS 22—Continued.

clude apparatus which involves something more than a mere mold or the support therefor and in general are regarded as machines for casting. Casting stereotype-plates and type are not included.

Search Classes—

22—METAL-FOUNDING, subclasses 2, Stereotype-casting apparatus; 3, Stereotype-casting apparatus, Combined machines; 6, Type-casting apparatus, and 7, Type-casting apparatus, Combined machines.

18—PLASTICS, subclass 26, Molding devices, Casting, and the subclasses thereunder.

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 29, Pottery-machines, Casting.

49—GLASS, subclass 39, Molding, Casting.

58. CASTING APPARATUS, COMPOSITE CASTINGS AND JOINTS. Machines for making castings or joints of two or more metals or a metal and a non-metal, except for producing compound ingots and for making joints in fences and casting leads on nets, which consist of something more than a mold—*i. e.*, means for moving the mold or other parts or feeding or cutting the wire or other article upon which the metal is to be cast. May include all functions properly classifiable under Casting apparatus.

Search Class—

18—PLASTICS, subclass 27, Molding devices, Casting, Candles.

59. CASTING APPARATUS, COMPOSITE CASTINGS AND JOINTS, FENCE AND NET LEADING. Machines for casting leads and lead-joints upon fences and nets. Usually comprise means for feeding the fence-wires or net-strings to and from the molds. May include all functions properly classifiable under Casting apparatus.

60. CASTING APPARATUS, COMPOSITE CASTINGS AND JOINTS, INGOTS. Machines for producing compound ingots. May include any function properly classifiable under Casting apparatus.

Note.—For mere molds for compound ingots see subclass 121, Molds, Composite castings and joints, Ingots.

61. CASTING APPARATUS, PIGS. Apparatus for casting pigs in horizontal open-topped molds that are not movable upon an endless chain or belt nor upon a table rotating about a vertical shaft. The molds are usually stationary during cooling of the casting. Mere pig-beds are not included unless having elements that render them machines. May include any function properly included under Casting apparatus.

Note.—For pig-molds see in this class, subclass 143, Molds, Metal, Ingots and pigs, Horizontal.

Note.—Rapping molds to loosen the pigs, coating the molds, and other additional functions are included in combination in this subclass, but not in subclasses hereunder.

Note.—For coating these molds see in this class, subclass 88, Mold coating and lining apparatus.

Search Class—

22—METAL-FOUNDING, subclass 75, Casting apparatus, Moving-mold, and 78, Casting apparatus, Moving-mold, Reciprocating.

62. CASTING APPARATUS, PIGS, ENDLESS-CHAIN. Machines for casting pigs in accordance with the definition of subclass 61, Casting apparatus, Pigs, in which a series of molds is mounted to move upon an endless chain or its equivalent or are connected together in such a way as to constitute an endless carrier.

Search Class—

22—METAL-FOUNDING, subclass 76, Casting apparatus, Moving-mold, Endless-chain.

63. CASTING APPARATUS, PIGS, ROTATING-TABLE. Machines for casting pigs in accordance with the definition of subclass 61, Casting apparatus, Pigs, in which a series of molds is mounted upon a table rotating upon a vertical axis.

Search Class—

22—METAL-FOUNDING, subclasses 21, Molding apparatus, Rotating-table, and 77, Casting apparatus, Moving-mold, Rotating-table.

64. CASTING APPARATUS, PLANTS. Combinations of a casting-machine or a casting device with other apparatus, except for molding, properly classifiable in this class and under Casting apparatus.

Note.—See definition of subclass 20, Molding apparatus, Plants, in this class.

Note.—Plants involving the melting of metals, as Bessemer plants, are classified in class 75, METALLURGY, subclass 188, Converters, Plants.

Search Class—

22—METAL-FOUNDING, subclass 61, Casting apparatus, Pigs.

65. CASTING APPARATUS, CENTRIFUGAL. Machines for casting metals by centrifugal force. May include in combination any of the functions separately classified in subclasses under Casting apparatus.

66. CASTING APPARATUS, TANDEM. Machines for casting metal in which a series of castings, usually ingots, are cast one upon the end of the other, forming a continuous product, which is generally broken into lengths. The mold moves forward with the casting in its travel or a portion of its travel, and then the mold parts are separated and returned to the point of pouring.

Note.—For similar machines in which the metal moves through the mold or die see class 207, PLASTIC METAL-WORKING.

Search Class—

22—METAL-FOUNDING, subclass 208, Processes, Casting, Tandem.

CLASS 22—Continued.

67. CASTING APPARATUS, COMPRESSION. This subclass includes casting-machines in which pressure is applied positively to the metal, except such as are classified in the several subdivisions thereof. The application of pressure by centrifugal force is not included under this head, nor is the application of pressure by means of a head of metal. Otherwise the subclasses under this head may include in combination any of the other functions separately classified in the subclasses under Casting apparatus.

Search Class—

18—PLASTICS, subclass 16, Molding devices, Presses, and the subclasses thereunder.

68. CASTING APPARATUS, COMPRESSION, CHARGING UNDER PRESSURE. Casting-machines as defined in the definition of subclass 67, Casting apparatus, Compression, in which the metal is forced into the mold under positive pressure and not capable of classification in any of the other subclasses under this head. This and the subclasses under this head may include in combination means for feeding metal in the form of ingots or in any other form to the pot.

Search Classes—

22—METAL-FOUNDING, subclass 80, Casting apparatus, Metal holding and pouring, Pot-charging.

18—PLASTICS, subclass 30, Molding devices, Chargers.

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 103, Block-presses, Chargers.

69. CASTING APPARATUS, COMPRESSION, CHARGING UNDER PRESSURE, PNEUMATIC. Casting-machines as defined in definition of subclass 67, Casting apparatus, Compression, in which the metal is forced into the mold under pneumatic pressure.

Search Class—

18—PLASTICS, subclass 30, Molding devices, Chargers.

70. CASTING APPARATUS, COMPRESSION, CHARGING UNDER PRESSURE, MELTING-POT AND PUMP. Casting-machines as defined in subclass 67, Casting apparatus, Compression, in which the metal is forced into the mold by means of a pump contained in a melting-pot or attached thereto and without means for heating the pot.

Search Class—

18—PLASTICS, subclass 30, Molding devices, Chargers.

71. CASTING APPARATUS, COMPRESSION, CHARGING UNDER PRESSURE, MELTING-POT AND PUMP, HEATED. Casting-machines as defined in subclass 67, Casting apparatus, Compression, in which the metal is forced into the mold by means of a pump contained in a melting-pot or attached thereto and with means for heating the pot.

72. CASTING APPARATUS, COMPRESSION, PNEUMATIC. Machines for casting as defined in the definition of subclass 67, Casting apparatus, Compression, in which the metal is compressed by pneumatic pressure after it is introduced into the mold, but is not introduced under pressure.

73. CASTING APPARATUS, VACUUM. Casting apparatus in which the air or other gas is exhausted or partially exhausted from the mold before, during, or after casting. May include in combination introduction of the metal when not under pressure and heating and moving mold.

74. CASTING APPARATUS, MOLD-HEATERS. Casting apparatus comprising heaters for molds usually in combination with the mold itself and may include means for introducing the metal when not under pressure and means for moving the mold.

Search Class—

18—PLASTICS, subclass 6, Molding devices, Heating and vulcanizing.

75. CASTING APPARATUS, MOVING-MOLD. Casting-machines in which the mold or molds have a motion between the casting operations or during the casting operation and not otherwise classifiable under this head. These subclasses may include in combination means for introducing metal when not under pressure.

Search Classes—

22—METAL-FOUNDING, subclass 61, Casting apparatus, Pigs.

18—PLASTICS, subclass 16, Molding devices, Presses.

76. CASTING APPARATUS, MOVING-MOLD, ENDLESS-CHAIN. Casting-machines in accordance with the definition of subclass 75, Casting apparatus, Moving-mold, in which the molds are mounted upon a moving endless chain or its equivalent.

Search Classes—

22—METAL-FOUNDING, subclass 62, Casting apparatus, Pigs, Endless-chain.

18—PLASTICS, subclass 16, Molding devices, Presses.

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses under Block-presses, Endless chain of molds.

77. CASTING APPARATUS, MOVING-MOLD, ROTATING-TABLE. Casting-machines as defined in the definition of subclass 75, Casting apparatus, Moving-mold, in which molds are mounted upon a table rotating upon a vertical axis.

Search Classes—

22—METAL-FOUNDING, subclasses 63, Casting apparatus, Pigs, Rotating-table, and 65, Casting apparatus, Centrifugal.

18—PLASTICS, subclass 20, Molding devices, Presses, Rotary mold-support.

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses under Block-presses, Rotary-mold, Facial.

CLASS 22—Continued.

78. **CASTING APPARATUS, MOVING-MOLD, RECIPROCATING.** Casting-machines as defined in the definition of subclass 75, Casting apparatus, Moving-mold, in which the molds are given a reciprocating motion between casting operations or during the casting operation.

Search Classes—

- 22—METAL-FOUNDING, subclasses 6, Type-casting apparatus and 61, Casting apparatus, Plgs.
18—PLASTICS, subclass 22, Molding devices, Presses, Reciprocating mold.
25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 54, Block-presses, Reciprocating-mold, and the subclasses thereunder.

79. **CASTING APPARATUS, METAL HOLDING AND POURING.** Devices for holding and discharging metal into molds or into other metal-holding devices without the application of pressure not otherwise classifiable under this head.

Note.—Crucibles are classified in class 75, METALLURGY, subclass 182, Crucibles.

80. **CASTING APPARATUS, METAL HOLDING AND POURING, POT-CHARGING.** Apparatus for charging metal-holding pots or their equivalent with metal in either solid or liquid form. It may include in combination the pot itself, but not means for creating pressure. Those involving a pump are classified under subclasses 70, Casting apparatus, Compression, Charging under pressure, Melting-pot and pump, and 71, Casting apparatus, Compression, Charging under pressure, Melting-pot and pump, Heated, and are cross-referenced into this subclass.

81. **CASTING APPARATUS, METAL HOLDING AND POURING, LADLES.** Ladles for conveying and pouring metals not otherwise classifiable under this head.

Search Class—

- 22—METAL-FOUNDING, subclass 82, Casting apparatus, Metal holding and pouring, Ladles, Carriers and manipulators.

82. **CASTING APPARATUS, METAL HOLDING AND POURING, LADLES, CARRIERS, AND MANIPULATORS.** Devices for holding, carrying, and manipulating metal-casting ladles which involve elements especially adapting them for this purpose.

Note.—Mere cranes, hoisting devices, trucks, etc., are not included, being classified in the appropriate functional classes, as 212, CRANES AND DERRICKS; 21, CARRIAGES AND WAGONS; 105, RAILWAY ROLLING-STOCK, etc.

83. **CASTING APPARATUS, METAL HOLDING AND POURING, LADLES, SKIMMING.** Metal-casting ladles provided with means for skimming the floating materials from the top of the metal.

84. **CASTING APPARATUS, METAL HOLDING AND POURING, LADLES, BOTTOM-POUR.** Metal-casting ladles provided with means for discharging the metal from the bottom or the lower part of the ladle and without internal stoppers.

Search Class—

- 22—METAL-FOUNDING, subclass 85, Casting apparatus, Metal holding and pouring, Bottom-pour, Internal-stopper.

85. **CASTING APPARATUS, METAL HOLDING AND POURING, LADLES, BOTTOM-POUR, INTERNAL-STOPPER.** Metal-casting ladles adapted to discharge the metal from the bottom or lower part of the ladle and provided with stoppers for the discharging-opening contained within the ladle.

86. **CASTING APPARATUS, METAL HOLDING AND POURING, LADLES, HAND.** Metal-casting ladles adapted to be supported and manipulated by hand.

87. **MOLD AND CORE DRYING APPARATUS.** Apparatus for drying sand or metal molds or cores in which the mold or core is itself a part of and in combination with the drying means.

Note.—Apparatus for drying molds and cores in which the molds or cores are merely placed within the drying-chamber and in which other articles could be placed therein for drying are classed in class 34, DRIERS.

88. **MOLD COATING AND LINING APPARATUS.** Apparatus for applying a blacking or other composition in a liquid, powdered, or other state to molds or cores. This subclass includes the coating of both sand and metal molds.

Search Classes—

- 18—PLASTICS, subclass 31, Molding devices, Mold wiping and coating.
91—COATING, appropriate subclasses.

89. **MOLD-MATERIAL-TREATING APPARATUS.** Apparatus for treating and preparing materials, such as sand and loam especially, to render them suitable for molding. Does not include mere grinding or sifting these materials unless in combination with other operations that fall under the definition.

Search Classes—

- 22—METAL-FOUNDING, subclass 217, Processes, Preparation of mold materials.
83—MILLS, subclass 56, Ore and coal, Sifters and screens.

90. **MOLD AND FLASK SUPPORTS.** Apparatus whose function is to support a mold or flask which does not permit the mold or flask to have a tilting motion. It is usually in combination with the mold or flask, and so may include separating the mold parts or ejecting the casting, but no casting or molding operations. Bottom boards for flasks and molders' benches are included.

CLASS 22—Continued.

Search Classes—

- 22—METAL-FOUNDING, subclasses 2, Stereotype-casting apparatus; 21, Molding apparatus, Rotating-table; 34, Molding apparatus, Removing mold; 40, Molding apparatus, Packing sand; 47, Molding apparatus, Drawing pattern; 48, Molding apparatus, Drawing pattern, Mold-lifting; 50, Molding apparatus, Drawing pattern, Stripping, and the subclasses thereunder; 59, Casting apparatus, Composite castings and joints, Fence and net leading, and 75, Casting apparatus, Moving-mold.

- 49—GLASS, subclass 41, Mold supports and carriers.

91. **MOLD AND FLASK SUPPORTS, TILTING.** Apparatus falling under the definition of the last subclass in which the support is so constructed as to permit the tilting of the mold or flask.

Search Class—

- 22—METAL-FOUNDING, subclasses 2, Stereotype-casting apparatus; 4, Stereotype-casting apparatus, Heating or cooling mold; 15, Molding apparatus, Curved molds; 32, Molding apparatus, Inverting flask, and 33, Molding apparatus, Inverting flask, Rock-over.

92. **MOLD-SEPARATING DEVICES.** Apparatus for separating the parts of the mold, not confined to those with means for drawing the core and not in combination with means for moving the mold as a whole or introducing the metal. May include the mold and means for ejecting the casting in combination.

Search Classes—

- 22—METAL-FOUNDING, subclasses 2, Stereotype-casting apparatus, and 48, Molding apparatus, Drawing pattern, Mold-lifting.

- 49—GLASS, subclass 42, Mold-separating devices.

93. **MOLD-SEPARATING DEVICES, DRAWING CORE.** Apparatus for drawing one or more cores from the mold and casting and not in combination with any other mold-operating or casting devices, except, in some cases, ejecting the casting. Usually the mold is a part of the combination.

Search Classes—

- 22—METAL-FOUNDING, subclasses 37, Molding apparatus, Core-setting, and 47, Molding apparatus, Drawing pattern.
49—GLASS, subclass 43, Mold-separating devices, Drawing core.

94. **CASTING-EJECTORS.** Apparatus for operating an ejector to force or draw the casting from the mold, not in combination with any other mold-operating or casting devices. The mold is usually a part of the combination. Molds merely provided with plungers or their equivalent and without means for operating them are included in Molds, Metal, Ejecting.

Search Class—

- 22—METAL-FOUNDING, subclasses 6, Type-casting apparatus, and 95, Casting-ejectors, Ingot-strippers.

95. **CASTING-EJECTORS, INGOT-STRIPPERS.** Apparatus for stripping ingots from their molds, not in combination with any other mold or ingot manipulating or casting devices.

Search Class—

- 22—METAL-FOUNDING, subclass 94, Casting-ejectors.

96. **FLASKS.** Castings, frames, etc., for holding sand during molding, and ordinarily known as "molders' flasks" containing elements which render them incapable of classification in any of the other subclasses under this head. Under this head are included combinations between the flasks and molds, patterns, chills, etc., cross-references being placed in the proper subclasses below. This subclass also includes "false flasks," which are frames temporarily placed on the flask to retain loose sand until pressed. But patents containing any means for operating the flask, pattern, or other parts or the sand are classed under Molding apparatus, even if nearly all of the invention lies in the flask.

97. **FLASKS, DENTAL-PLATE.** Flasks falling under the definition of subclass 96, Flasks, which are specially adapted for molding and casting metal dental plates.

Search Class—

- 18—PLASTICS, subclass 33, Molding devices, Flasks and clamps, Dental.

98. **FLASKS, VERTICAL-PIPE.** Flasks falling under the definition of subclass 96, Flasks, which are especially adapted for molding vertical pipes.

Search Class—

- 22—METAL-FOUNDING, subclasses 16, Molding apparatus, Pipes vertical; 17, Molding apparatus, Pipes vertical, Compacting pattern, and 18, Molding apparatus, Pipes vertical, Compacting pattern, Rotating.

99. **FLASKS, MULTIPART.** Flasks composed of three or more parts, usually the cope, drag, and cheek, which latter is frequently further divided. Each part is adapted and constructed to hold and retain its portion of the mold when separated from the other parts, and therefore the mold must always be divided into as many separable parts as the flask.

Search Class—

- 22—METAL-FOUNDING, subclasses 106, Flasks, Separable sides or ends, and 107, Flasks, Separable sides or ends, Snap-flasks, for flasks merely made separable to permit removal from the mold, which are not included in this subclass.

100. **FLASKS, EXTENSIBLE.** Flasks having means whereby the dimensions may be decreased or increased. Does not include those in which the sides or ends may be merely exchanged for others of different lengths. Usually have some telescoping action.

CLASS 22—Continued.

101. **FLASKS, PATTERN, CORE, OR INSERT HOLDING.** Flasks provided with means for supporting patterns, cores, or inserts, either directly or indirectly, by means of pattern or match plates during molding or casting. Usually include these elements in combination.

Note.—Such flasks when especially adapted for molding sash-weights are separately classed in subclass 102, Flasks, Pattern, core, or insert holding, Sash-weights, which should be searched.

102. **FLASKS, PATTERN, CORE, OR INSERT HOLDING, SASH-WEIGHTS.** Flasks which have means for supporting the pattern during the molding or cores or inserts during the casting, specially adapted for molding sash-weights. They usually form multiple molds.

103. **FLASKS, CHILL-HOLDING.** Flasks provided with means for attaching a chill to the flask or flasks supported on a chill.
Note.—Those for molding and casting wheels are separately classed in subclass 104, Flask, Chill-holding, Wheel.

104. **FLASKS, CHILL-HOLDING, WHEEL.** Flasks for molding and casting wheels of all kinds in which the chill is supported by the flask or the flask by the chill.

Search Class—

22—METAL-FOUNDING, subclass 128, Molds, Sand and metal, Circular chills, Wheel.

105. **FLASKS, SWINGING-COPE.** Flasks composed of cope and drag in which the latter is pivoted or hinged to the former, so that it may be elevated by swinging on such pivots or hinges. Includes improvements in hinges for such flasks when not capable of general use.

106. **FLASKS, SEPARABLE SIDES OR ENDS.** Half-flasks in which the improvements consist in means for removably connecting the sides or ends so that they may be separated without destroying the flask. Does not include snap-flasks. They are usually so constructed as to be readily removable from the mold.

Search Class—

22—METAL-FOUNDING, subclass 107, Flasks, Separable sides or ends, Snap-flasks.

107. **FLASKS, SEPARABLE SIDES OR ENDS, SNAP-FLASKS.** Half-flasks falling under the definition of the last subclass in which the parts are connected by a hinge or its equivalent at one corner and at the opposite corner having a snap device which fixes the parts together when closed.

Note.—These flasks sometimes include in combination means for holding the mold after removal; but for such means alone see subclass 112, Mold jackets and weights.

108. **FLASKS, GATE-EXTENSION.** Molding-flasks provided with an extension or extensions for holding a molded gate or sprue.

109. **FLASKS, CLAMPING.** Patents in which the entire invention lies in the means for clamping the cope and drag or cheek together, either in combination or not, with means for attaching such clamping device to the flasks.

Note.—Clamps which are entirely removable and portable and have no part thereof attached permanently to the flask are classed in class 144, Woodworking, subclass 297, Clamps, Portable, and subclasses thereunder.

Search Classes—

22—METAL-FOUNDING, subclass 156, Molds, Metal, Clamping.
18—PLASTICS, subclass 43, Molding devices, Molds, Clamping.
49—GLASS, subclass 75, Molds, Clamping.

110. **FLASKS, GUIDES.** Patents in which the entire invention lies in the means for guiding and holding in position, but not clamping the parts, as the cope and drag or cheek. May include in combination means for attaching parts of the guide to the flasks.

Search Class—

18—PLASTICS, subclasses 32, Molding devices, Flasks and clamps, and 33, Molding devices, Flasks and clamps, Dental.

111. **FLASKS, SAND-RETAINING DEVICES.** Patents in which the entire invention lies in cross-bars or other means for holding the sand within the flask. May be in combination with the flask broadly, and means for attaching such bars, etc., to the flask, but not when embodying other improvements in the flask itself.

112. **MOLD JACKETS AND WEIGHTS.** Jackets, weights, and holders adapted to be placed upon or around molds, usually after a snap or other separable flask has been removed therefrom, to protect the mold and hold it together or in place during, before, and after pouring.

Search Class—

22—METAL-FOUNDING, subclass 107, Flasks, Separable sides or ends, Snap-flasks.

113. **MOLDS.** Improvements in molds which are limited thereto and not combined with flasks or any external devices whatever, but may be combined with cores, chills, and the like and not classifiable in any of the other subclasses under this head. In this subclass are included only those molds which are composed entirely or in part of materials other than sand, loam, or metal, in which the invention is not confined to a particular composition and which are not especially adapted for finger-rings, split castings, composite castings, or joints.

CLASS 22—Continued.

114. **MOLDS, FINGER-RINGS.** Molds of any material especially adapted for casting finger-rings and not combined with flasks or any external devices whatever.

115. **MOLDS, SPLIT CASTINGS.** Molds of any materials especially adapted for forming castings intended to be split either for removal from the mold or for attachment to something after being finished and not combined with flasks or any external devices.

116. **MOLDS, COMPOSITE CASTINGS AND JOINTS.** Molds not formed entirely of sand or loam and provided with means for sustaining a metal piece or part to be united by the inflowing metal to the casting produced or with means for introducing two or more metals in a molten state so that they can be united by the casting operation and not capable of classification in any of the subclasses under this head.

Search Classes—

22—METAL-FOUNDING, subclasses 58, Casting apparatus, Composite castings and joints, and 59, Casting apparatus, Composite castings and joints, Fence and net leading.

18—PLASTICS, subclass 36, Molding devices, Molds, Blank covering and filling.

49—GLASS, subclass 66, Molds, Uniting parts.

117. **MOLDS, COMPOSITE CASTINGS AND JOINTS, PIPE-JOINTS.** Molds, usually metal, for casting pipe-joints.

118. **MOLDS, COMPOSITE CASTINGS AND JOINTS, PIPE-JOINTS, EXTERNAL BANDS.** Bands, clips, or clamps, adapted to be placed around the outside of pipes to form a part of a mold for casting pipe-joints.

119. **MOLDS, COMPOSITE CASTINGS AND JOINTS, PIPE-JOINTS, EXPANDING CLAMPS.** Pipe-joint molds and parts of molds provided with means for expanding the pipe or holding it in an expanded condition.

120. **MOLDS, COMPOSITE CASTINGS AND JOINTS, WHEELS.** Molds usually of metal in part or in whole, for making wheels of two or more metals. In general there are two kinds of these molds—those in which the spokes are fixed into the hub by casting the hub around their ends and those in which the rim is made of a different kind of metal from the rest of the wheel by casting one part upon another part previously formed.

121. **MOLDS, COMPOSITE CASTINGS AND JOINTS, INGOTS.** Ingot-molds, usually of metal, especially adapted for production of compound ingots.

Search Class—

22—METAL-FOUNDING, subclass 60, Casting apparatus, Composite castings and joints, Ingots.

122. **MOLDS, COMPOSITE CASTINGS AND JOINTS, NON-METALLIC INSERTS.** Molds in which non-metallic material is placed partly within the mold, so that the metal poured shall unite it or hold it upon or in the casting.

123. **MOLDS, COMPOSITE CASTINGS AND JOINTS, LINING ARTICLES.** Molds for producing linings within metallic articles by casting the metal upon their inner surface. The article usually forms the principal part of the mold and is often included in combination.

124. **MOLDS, COMPOSITE CASTINGS AND JOINTS, SAND MOLDS.** Molds composed entirely of sand, especially adapted for producing composite castings and joints.

Search Class—

22—METAL-FOUNDING, subclass 101, Flasks, Pattern, core, or insert holding.

125. **MOLDS, COMPOSITE CASTINGS AND JOINTS, SAND MOLDS, INSERT-CLAMPS.** Clamps for holding rails or other inserts within sand molds while the metal is poured into the mold.

126. **MOLDS, SAND AND METAL.** Molds composed partly of sand and partly of metal and not including any other material in which the chills are not both circular and external.

Search Class—

22—METAL-FOUNDING, subclasses 103, Flasks, Chill-holding; 128, Molds, Sand and metal, Circular chills, Wheel, and 129, Molds, Sand.

127. **MOLDS, SAND AND METAL, CIRCULAR CHILLS.** Molds composed entirely of sand and metal in which the metal chills are circular and disposed about the circumference of the casting to be produced. These chills may be in one or several parts and are usually applied to rolls and other circular objects; but wheels are separately classified in subclass 128, Molds, Sand and metal, Circular chills, Wheel.

Search Class—

22—METAL-FOUNDING, subclasses 103, Flasks, Chill-holding, and 128, Molds, Sand and metal, Circular chills, Wheel.

128. **MOLDS, SAND AND METAL, CIRCULAR CHILLS, WHEEL.** Molds as defined in definition of subclass 127, Molds, Sand and metal, Circular chills, especially adapted for casting wheels.

Search Class—

22—METAL-FOUNDING, subclass 104, Flasks, Chill-holding, Wheel.

129. **MOLDS, SAND.** Molds which are limited thereto and not combined with flasks or any external devices, composed entirely of sand or loam and not classifiable in any of the other subclasses under this head.

CLASS 22—Continued.

- Search Class—**
22—METAL-FOUNDING, subclasses 113, Molds, and 126, Molds, Sand and metal.
130. **MOLDS, SAND, MULTIPLE.** Sand molds in which there is a combination of two or more molds arranged to be filled in succession or simultaneously from a single runner or series of runners. They are usually piled one above the other.
- Search Class—**
22—METAL-FOUNDING, subclasses 102, Flasks, Pattern, core, or insert holding, Sash-weights; 142, Molds, Metal, Ingots and pigs, Multiple, and 149, Molds, Metal, Multiple.
131. **MOLDS, SAND, WITH CORES.** Sand molds provided with baked or green sand cores not exclusively circumferential or vertical.
- Search Class—**
22—METAL-FOUNDING, subclass 151, Molds, Metal, Separable cores.
132. **MOLDS, SAND, WITH CORES, CIRCUMFERENTIAL.** Sand molds provided with baked or green sand cores disposed around the circumference of the mold and usually forming most of the outside boundary of the mold and not having other cores.
133. **MOLDS, SAND, WITH CORES, VERTICAL.** Sand molds provided with vertical baked or green sand cores only.
134. **MOLDS, SAND, SPRUE, GATE, RUNNER, AND RISER.** Sand molds in which the invention lies entirely in the sprue, gate, runner, or riser.
- Search Class—**
22—METAL-FOUNDING, subclasses 155, Molds, Metal, Runner, and 162, Patterns, Sprue, gate, and runner.
135. **MOLDS, SAND, VENTS.** Improvements in vents for allowing air and gas to escape from sand molds during casting.
- Search Classes—**
22—METAL-FOUNDING, subclasses 171, Cores, Vents; 176, Chills, Plow, Vents, and 183, Chills, Vents.
49—GLASS, subclass 71, Molds, Blowing, Vented.
136. **MOLDS, METAL.** Molds, limited strictly thereto, composed entirely of metal and not capable of classification in any of the other subclasses under this head.
- Search Classes—**
22—METAL-FOUNDING, subclasses 5, Stereotype-casting apparatus, Molds; 8, Type-casting apparatus, Molds, and 113, Molds.
18—PLASTICS, subclass 34, Molding devices, Molds.
49—GLASS, subclass 65, Molds.
107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 19, Molding apparatus, Molds.
137. **MOLDS, METAL, CHAINS.** Metal molds for casting chains.
138. **MOLDS, METAL, WHEELS.** Metal molds for casting pulleys and all other kinds of wheels.
- Search Class—**
22—METAL-FOUNDING, subclasses 104, Flasks, Chill-holding, Wheel; 114, Molds, Finger-ring; 120, Molds, Composite castings and joints, Wheels, and 128, Molds, Sand and metal, Circular chills, Wheel.
139. **MOLDS, METAL, INGOTS AND PIGS.** Metal molds for casting ingots or pigs not capable of classification in any of the other subclasses under this head.
- Search Class—**
22—METAL-FOUNDING, subclasses 60, Casting apparatus, Composite castings and joints, Ingots, and 121, Molds, Composite castings and joints, Ingots.
140. **MOLDS, METAL, INGOTS AND PIGS, HOLLOW.** Metal molds provided with a core for casting hollow ingots and pigs.
141. **MOLDS, METAL, INGOTS AND PIGS, BOTTOM-POUR.** Metal ingot and pig molds provided with means at the bottom for the introduction of metal. The molds are entirely of metal; but the runner is sometimes formed of refractory or other non-metallic material.
142. **MOLDS, METAL, INGOTS AND PIGS, MULTIPLE.** Groups of metal ingot or pig molds in which more than one mold is filled from the same sprue or runner. They are frequently piled one upon another.
- Search Class—**
22—METAL-FOUNDING, subclasses 130, Molds, Sand, Multiple; 141, Molds, Metal, Ingots and pigs, Bottom-pour, and 149, Molds, Metal, Multiple.
143. **MOLDS, METAL, INGOTS AND PIGS, HORIZONTAL.** Metal molds for casting ingots or pigs in horizontal position. They are chiefly open-topped pig-molds.
- Search Class—**
22—METAL-FOUNDING, subclass 61, Casting apparatus, Pigs.
144. **MOLDS, METAL, INGOTS AND PIGS, DOUBLE-WALLED.** Ingot and pig molds having two or more walls, the inner one at least being of metal, and usually having a packing of non-heat-conducting material between them; but some merely have a space for the circulation of air or water.
145. **MOLDS, METAL, INGOTS AND PIGS, SEPARABLE SIDES.** Longitudinally-divided metal ingot or pig molds not provided with clamps.

CLASS 22—Continued.

146. **MOLDS, METAL, INGOTS AND PIGS, SEPARABLE SIDES, CLAMPED.** Longitudinally-divided metal ingot or pig molds provided with clamps for holding the parts together.
- Search Class—**
22—METAL-FOUNDING, subclass 156, Molds, Metal, Clamping.
147. **MOLDS, METAL, INGOTS AND PIGS, SINK-HEADS AND FEEDERS.** Ingot and pig molds in which the entire invention lies in a sink-head or feeder for supplying the mold with molten metal as the metal first cast shrinks.
148. **MOLDS, METAL, INGOTS AND PIGS, STOPPERS.** Stoppers for use in metal ingot and pig molds and adapted to stop off the flow of metal. Generally used in bottom-pour molds.
149. **MOLDS, METAL, MULTIPLE.** Groups of metal molds in which more than one mold is filled from the same sprue or runner. They are usually piled one upon another.
- Search Class—**
22—METAL-FOUNDING, subclasses 130, Molds, Sand, Multiple, and 142, Molds, Metal, Ingots and pigs, Multiple.
150. **MOLDS, METAL, SPRUE-SEPARATING.** Metal molds provided with means for separating the sprue from the casting. The sprue-separator is a mere attachment to the mold.
151. **MOLDS, METAL, SEPARABLE CORES.** Metal molds provided with a plurality of metallic cores, capable of separation from the walls of the mold.
- Search Class—**
22—METAL-FOUNDING, subclass 131, Molds, Sand, With cores.
152. **MOLDS, METAL, SEPARABLE CORES, SINGLE.** Metal molds provided with a single metallic core capable of separation from the walls of the mold.
- Search Class—**
22—METAL-FOUNDING, subclasses 93, Mold-separating devices, Drawing core, and 140, Molds, Metal, Ingots and pigs, Hollow.
153. **MOLDS, METAL, TWO-PART.** Metal molds consisting of two parts only.
- Search Class—**
18—PLASTICS, subclass 42, Molding devices, Molds, Two and three part.
154. **MOLDS, METAL, EJECTING.** Metal molds provided with an ejector for the casting, but not with mechanism for operating.
- Search Class—**
22—METAL-FOUNDING, subclass 94, Casting-ejectors.
155. **MOLDS, METAL, RUNNER.** Runners for metal molds not involving the structure of the mold itself.
- Search Class—**
22—METAL-FOUNDING, subclass 134, Molds, Sand, Sprue, gate, runner, and riser.
156. **MOLDS, METAL, CLAMPING.** Clamps for metal molds. The molds themselves are not included in this subclass except as cross-references unless claimed broadly in combination with the clamp.
- Search Classes—**
22—METAL-FOUNDING, subclasses 109, Flasks, Clamping, and 146, Molds, Metal, Ingots and pigs, Separable sides, Clamped.
18—PLASTICS, subclass 43, Molding devices, Molds, Clamping.
157. **PATTERN AND MATCH PLATES.** Devices for temporarily or permanently supporting patterns and parts of patterns during molding, not combined with any other elements except the patterns themselves. Includes compositions for making such devices.
- Search Class—**
22—METAL-FOUNDING, subclasses 101, Flasks, Pattern, core, or insert holding, and 181, Chills, Circular, Non-chilling rings.
158. **PATTERNS.** Molding patterns and parts of patterns to be used in this art not falling under any of the other subclasses under this head.
- Search Class—**
22—METAL-FOUNDING, subclass 51, Molding apparatus, Drawing pattern, Stripping, Compound stripping-plate
159. **PATTERNS, PIPE.** Patterns especially adapted for molding pipes.
- Search Class—**
22—METAL-FOUNDING, subclass 16, Molding, Pipes vertical, and the subclasses thereunder.
160. **PATTERNS, INSERT, CORE, OR CHILL SUPPORTING.** Patterns provided with means for supporting inserts, cores, or chills and leaving them in the mold when drawn. Does not include those which support detachable parts of the pattern itself.
- Search Class—**
22—METAL-FOUNDING, subclass 37, Molding apparatus, Core-setting.
161. **PATTERNS, CORE-FORMING.** Patterns made hollow or with a cavity, so that they will form a green-sand core at the time the main part of the mold is formed.
- Search Class—**
22—METAL-FOUNDING, subclass 198, Processes, Molding, Green-sand, Mold and core.
162. **PATTERNS, SPRUE, GATE, AND RUNNER.** Patterns exclusively adapted for forming sprues, gates, and runners in molds.
- Note.**—Sprue-cutters are included in subclass 185, Molding-tools.

CLASS 22—Continued.

163. **PATTERNS, UNDERCUTTING.** Patterns having means for producing undercut parts in the molds, except those falling under the definition of subclass 160, Patterns, Insert, core, or chill supporting.

Search Class—

22—METAL-FOUNDING, subclasses 51, Molding apparatus, Drawing patterns, Stripping, Compound stripping-plate, and 53, Molding-apparatus, Drawing pattern, Stripping; Curvilinear dra⁷.

- 163.5 **PATTERNS, COATING.** Materials and compositions for coating a pattern to prevent it from sticking to the sand of the mold.

164. **PATTERNS, COMPOSITION AND COMPOSITE.** Inventions which are confined to the materials of which the patterns are made or to the structure of the patterns as composed of a series of materials and independent of other features of construction.

165. **CORES.** Inventions limited to that part of the mold which forms internal cavities in the article produced. Usually formed of material which has to be dried or baked, and not classifiable in any of the other subclasses under this head. May include core parts in combination.

Search Class—

22—METAL-FOUNDING, subclasses 13, Molding apparatus, Core-making, Core-boxes; 126, Molds, Sand and metal; 131, Molds, Sand, With cores, and the subclasses thereunder.

166. **CORES, PIPE.** Cores especially adapted for use in molding pipes or long tubes.

Search Class—

22—METAL-FOUNDING, subclasses 133, Molds, Sand, With cores, Vertical, and 140, Molds, Metal, Ingots and pigs, Hollow.

167. **CORES, CHILL OR INSERT HOLDING.** Cores adapted for holding chills or inserts within the mold or mold-walls while casting.

168. **CORES, METAL.** Cores formed entirely of metal, except S-trap and contracting cores.

Search Class—

22—METAL-FOUNDING, subclasses 140, Molds, Metal, Ingots and pigs, Hollow, 151, Molds, Metal, Separable cores, and 152, Molds, Metal, Separable cores, Single.

169. **CORES, METAL, S-TRAP.** Metal cores for S-shaped plumbers' traps.

Search Class—

22—METAL-FOUNDING, subclasses 170, Cores, Metal, Contracting, and 173, Cores, Core-bars, Collapsible.

170. **CORES, METAL, CONTRACTING.** Metal cores, except for S-shaped plumbers' traps, which are constructed to contract and designed to be used without a coating of appreciable thickness.

Search Classes—

22—METAL-FOUNDING, subclasses 166, Cores, Pipe; 169, Cores, Metal, S-trap; 173, Cores, Core-bars, Collapsible, and 182, Chills, Circular, Contracting.

113—SHEET-METAL WARE, MAKING, subclass 103, Soldering, Clamps, Expanding Mandrel.

171. **CORES, VENTS.** Vents for cores for conducting air and gases therefrom.

Search Class—

22—METAL-FOUNDING, subclasses 135, Molds, Sand, Vents; 176, Chills, Plow, Vents, and 183, Chills, Vents.

172. **CORES, CORE-BARS.** Inventions limited to core-bars, arbors, and supports contained within the core and whose function is entirely to support the core and which are not capable of collapsing.

Note.—Core bars claimed in combination with the non-metallic core-body are classified elsewhere, usually in subclass 165, Cores.

173. **CORES, CORE-BARS, COLLAPSIBLE.** Core-bars as defined in the last subclass which are capable of collapsing in order that the core may be removed from the casting.

Note.—Core-bars claimed in combination with the non-metallic core-body are classed elsewhere, usually in subclass 166, Cores, Pipe.

Search Class—

22—METAL-FOUNDING, subclasses 166, Cores, Pipe; 169, Cores, Metal, S-trap, and 170, Cores, Metal, Contracting.

174. **CHILLS.** Inventions limited to metallic chills for use in sand molds and not classifiable in any of the other subclasses under this head.

175. **CHILLS, PLOW.** Chills especially adapted for molding parts of plows, usually the moldboards.

Note.—All plow-molds are cross-referenced into this subclass, except those in subclass 176, Chills, Plow, Vents.

176. **CHILLS, PLOW, VENTS.** Chills falling under the definition of the last subclass provided with means for conducting away the air or gases.

Search Class—

22—METAL-FOUNDING, subclasses 135, Molds, Sand, Vents; 171, Cores, Vents, and 183, Chills, Vents.

177. **CHILLS, HEATED OR COOLED.** Chills provided with means for heating or cooling either before or during casting.

Note.—All heated and cooled metal molds are cross-referenced into this subclass.

CLASS 22—Continued.

Search Class—

22—METAL-FOUNDING, subclass 4, Stereotype-casting apparatus, Heating or cooling mold.

178. **CHILLS, CIRCULAR.** Chills to be placed about the circumference of the mold and forming wholly or partly the circumferential boundary of the casting, except such as are specially adapted to form gear-teeth and rolls and those having a non-conducting ring or capable of contracting.

Search Class—

22—METAL-FOUNDING, subclasses 127, Molds, Sand and metal, Circular chills; 128, Molds, Sand and metal, Circular chills, Wheel; 138, Molds, Metal, Wheels, and 181, Chills, Circular, Non-chilling rings.

179. **CHILLS, CIRCULAR, GEAR-TEETH.** Chills for forming gear-teeth, which are placed around the circumference of the mold and may be in one or many parts. Usually each tooth or each space between the teeth is formed by a separate chill.

180. **CHILLS, CIRCULAR, ROLLS.** Circular chills for forming parts of rolls.

Search Class—

22—METAL-FOUNDING, subclass 127, Molds, Sand and metal, Circular chills.

181. **CHILLS, CIRCULAR, NON-CHILLING RINGS.** Circular chills provided with a recess which is filled either with sand or air, so that the chill presents a non-heat-conducting surface to the molten metal at some point.

182. **CHILLS, CIRCULAR, CONTRACTING.** Circular chills which are capable of contracting.

Search Class—

22—METAL-FOUNDING, subclass 170, Cores, Metal, Contracting.

183. **CHILLS, VENTS.** Improvements in vents for chills.

Search Classes—

22—METAL-FOUNDING, subclasses 135, Molds, Sand, Vents; 171, Cores, Vents, and 176, Chills, Plow, Vents.

49—GLASS, subclass 71, Molds, Blowing, Vented.

184. **CORE CHAPLETS AND SUPPORTS.** Devices adapted for holding cores within the molds while casting. They are also sometimes used for holding the pattern while forming the mold. Mere chaplets are included, as well as supports, which extend into the walls of the molds, or even into the flasks.

Search Class—

22—METAL-FOUNDING, subclass 101, Flasks, Pattern, core, or insert holding.

185. **MOLDING-TOOLS.** Hand tools and implements exclusively for use in forming sand molds and cores and other foundry operations not otherwise classifiable under this head and not capable of general use in other arts. Under this head are included only such tools as are adapted to be operated and supported by the hand.

186. **MOLDING-TOOLS, PATTERN-LIFTERS AND DRAW-PLATES.** Pattern-lifters, rapping-bars, and draw-plates adapted to draw or lift patterns and combinations thereof falling under the definition of subclass 185, Molding-tools.

187. **MOLDING-TOOLS, RAMMERS.** Hand-rammers exclusively adapted for molding.

Search Class—

22—METAL-FOUNDING, subclass 46, Molding apparatus, Packing sand, Press-heads and plungers.

188. **MOLD AND CORE MATERIALS.** Materials and compositions for exclusive use in making molds for casting metals. Includes alleged processes consisting in forming a mold of a particular composition or material or casting metal in a mold of a particular composition or material unless some other feature or element is included.

Search Class—

22—METAL-FOUNDING, subclasses 113, Molds, and 189, Mold and core materials, Coatings and linings.

189. **MOLD AND CORE MATERIALS, COATINGS AND LININGS.** Materials and compositions for exclusive use in coating and lining metal, sand, and other molds for casting metals. Includes alleged processes consisting in lining or coating a mold with a particular composition or material or casting metal in a mold lined or coated with a particular composition or material. Does not include molds built up of two or more layers of different materials except as cross-references.

190. **PROCESSES.** All processes including steps not capable of classification in any of the other subclasses under this head and which belong in the class by its definition.

Search Class—

22—METAL-FOUNDING, subclasses 1, Miscellaneous, and 191, Processes, Pattern-plate and match making.

191. **PROCESSES, PATTERN-PLATE AND MATCH MAKING.** All processes for making pattern-plates and matches for use in this art. They include, either singly or combined, molding, casting, and any other functions properly classifiable in this class.

Search Class—

22—METAL-FOUNDING, subclass 157, Pattern and match plates.

CLASS 22—Continued.

192. PROCESSES, TREATING MOLD. Processes of treating sand, metal, and other molds to prepare them for casting metals. Includes drying, burning, coating, etc., and may include in combination molding, casting, or preparing the mold materials.

Search Class—

22—METAL-FOUNDING, subclasses 87, Mold and core drying apparatus, and 88, Mold coating and lining apparatus.

193. PROCESSES, MOLDING. Processes of making molds for casting metals from plastic mold materials except green sand and not confined to molding by destroying the pattern in the mold. Combined processes including steps not classifiable in any of the subclasses under this head are included. Casting and the preparation of the mold materials may be included in combination.

Search Classes—

22—METAL-FOUNDING, subclasses 9, Molding apparatus; 97, Flasks, Dental-plate, and 191, Processes, Pattern-plate and match making.

18—PLASTICS, subclass 55, Processes, Molding.

42—GLASS, subclass 85, Processes, Molding.

194. PROCESSES, MOLDING, CORE-MAKING. Processes of molding cores, except those in which a hollow pattern forms both mold and core simultaneously. May include in combination the preparation of the molding materials.

Search Class—

22—METAL-FOUNDING, subclasses 10, Molding apparatus, Core-making; 11, Molding apparatus, Core-making, Die-expressing; 12, Molding apparatus, Core-making, Rotating core-bar, and 198, Processes, Molding, Green-sand, Mold and core.

195. PROCESSES, MOLDING, PATTERN-MAKING. Processes of making patterns by molding plastic materials. May include in combination preparation of such materials prior to molding. (See general definition, paragraph 6).

Search Class—

22—METAL-FOUNDING, subclass 191, Processes, Pattern-plate and match making.

196. PROCESSES, MOLDING, DESTROYING PATTERN. Processes of molding green sand and other plastic materials for metal-founding in which the pattern is formed of destructible material, the plastic material formed around it, and the pattern destroyed, usually by heat, to remove it from the mold. Contains the "cire perdue" process of making molds.

197. PROCESSES, MOLDING, GREEN-SAND. Processes of molding confined to green sand or sand not intended to be baked before use and not classifiable in the next two subclasses. Includes all other strictly molding operations.

Search Class—

22—METAL-FOUNDING, subclasses 9, Molding apparatus; 36, Molding apparatus, Charging-flask, Under pressure; 191, Processes, Pattern-plate and match making, and 198, Processes, Molding, Green-sand, Mold and core.

198. PROCESSES, MOLDING, GREEN-SAND, MOLD AND CORE. Processes of molding entirely in green sand which involve the making of the mold and core at once or in connection with each other. May include any strictly molding operation.

Search Class—

22—METAL-FOUNDING, subclasses 161, Patterns, Core-forming, and 194, Processes, Molding, Core-making.

199. PROCESSES, MOLDING, GREEN-SAND, DRAWING PATTERN. Processes limited to the drawing of the pattern from the mold.

Search Class—

22—METAL-FOUNDING, subclasses 14, Molding apparatus, Screw-threads; 47, Molding apparatus, Drawing pattern; 48, Molding apparatus, Drawing pattern, Mold-lifting; 50, Molding apparatus, Drawing pattern, Stripping, and 56, Molding apparatus, Drawing pattern, Vibrating.

200. PROCESSES, CASTING. Processes exclusively for casting, not classifiable in any of the subordinate subclasses. Casting includes introducing the metal into the mold and treating it therein.

Search Classes—

22—METAL-FOUNDING, subclasses 57, Casting apparatus; 65, Casting apparatus, Centrifugal, and 73, Casting apparatus, Vacuum.

18—PLASTICS, subclass 58, Processes, Molding, casting and dipping.

201. PROCESSES, CASTING, COMPOSITE ARTICLE. Processes of making composite articles and joints or uniting metals by casting a metal onto another while the second is in a molten state or casting both into contact with each other, so as to form a close union.

Search Class—

22—METAL-FOUNDING, subclasses 60, Casting apparatus, Composite castings and joints, Ingots, and 205, Processes, Casting, Composite article, One metal solid, Heated, By original heat of casting.

202. PROCESSES, CASTING, COMPOSITE ARTICLES, PARTLY NON-METALLIC. Processes of making composite articles and joints or uniting a metal to a non-metal by casting a metal in a molten state upon or against a non-metallic article or blank.

CLASS 22—Continued.

Search Class—

22—METAL-FOUNDING, subclass 122, Molds, Composite castings and joints, Non-metallic inserts.

203. PROCESSES, CASTING, COMPOSITE ARTICLES, ONE METAL SOLID. Processes of making composite articles or joints or uniting metals by casting one metal in a fluid state onto another which is solid and not heated previous to the final pouring of the metal, at least one of said metals being other than iron or steel.

Search Class—

22—METAL-FOUNDING, subclasses 58, Casting apparatus, Composite castings and joints; 116, Molds, Composite castings and joints; 204, Processes, Casting, Composite articles, One metal solid, Heated, and 205, Processes, Casting, Composite articles, Heated, By original heat of casting.

204. PROCESSES, CASTING, COMPOSITE ARTICLE, ONE METAL SOLID, HEATED. Processes of making composite castings or joints or uniting metals by casting one metal in a fluid state onto another which is solid and has been heated prior to the final pouring. The solid metal is sometimes heated by letting the molten metal flow over it before finally pouring and holding it in the mold. Includes all metals.

205. PROCESSES, CASTING, COMPOSITE ARTICLE, ONE METAL SOLID, HEATED, BY ORIGINAL HEAT OF CASTING. Processes of making composite castings or joints or uniting metals by casting one metal and before it has become cool, but after it has hardened, casting the other upon or in contact with it. Includes all metals.

Search Class—

22—METAL-FOUNDING, subclasses 60, Casting apparatus, Composite castings and joints, Ingots, and 201, Processes, Casting, Composite article.

206. PROCESSES, CASTING, COMPOSITE ARTICLE, ONE METAL SOLID, IRON AND STEEL. Processes under the head of subclass 203, Processes, Casting, Composite articles, One metal solid, except that both metals are iron or steel and no pressure is applied.

Search Class—

22—METAL-FOUNDING, subclasses 58, Casting apparatus, Composite castings and joints; 116, Molds, Composite castings and joints; 204, Processes, Casting, Composite article, One metal solid, Heated, and 205, Processes, Casting, Composite article, One metal solid, Heated, By original heat of casting.

207. PROCESSES, CASTING, COMPOSITE ARTICLE, ONE METAL SOLID, IRON AND STEEL, COMPRESSION. Processes of the kind designated in the title in which pressure is applied to the metals during the casting operation or afterward to consolidate the products.

208. PROCESSES, CASTING, TANDEM. Processes of casting a series of castings, usually ingots, one upon the end of the other, forming a continuous product designed to be broken into lengths.

Search Class—

22—METAL-FOUNDING, subclass 66, Casting apparatus, Tandem.

209. PROCESSES, CASTING, INTRODUCING METAL. Processes of casting limited to the manner of introduction of metal into the mold.

Search Class—

22—METAL-FOUNDING, subclasses 68, Casting apparatus, Compression, Charging under pressure; 79, Casting apparatus, Metal holding and pouring, and 201, Processes, Casting, Composite article.

210. PROCESSES, CASTING, INTRODUCING METAL, BY IMMERSION. Processes of casting limited to the introduction of the metal into the mold by immersing the mold in the molten metal.

211. PROCESSES, CASTING, ANNEALING IN MOLD. Processes of casting consisting in so treating the metal while in the mold as to anneal it. Includes cooling in combination.

Search Classes—

22—METAL-FOUNDING, subclass 212, Processes, Casting, Cooling.

49—GLASS, subclass 85, Processes, Molding.

212. PROCESSES, CASTING, COOLING. Processes of casting consisting in cooling the metal which is in the mold, except for chilling iron.

213. PROCESSES, CASTING, COOLING, CHILLING IRON. Processes of casting iron to produce chilled surfaces by casting the desired portion against a heat-conducting surface.

214. PROCESSES, CASTING, TREATING WITH GASES. Processes of casting consisting in treating the metal in the mold with gases or vapors.

215. PROCESSES, CASTING, TREATING WITH SOLIDS. Processes of casting consisting in treating the metal in the mold with solid substances.

216. PROCESSES, CASTING, PREVENTING PIPING BY MANIPULATION. Processes of preventing piping in castings by manipulating the casting while solidifying. Other ways of preventing piping are included in several other subclasses under the head of subclass 200, Processes, Casting.

CLASS 22—Continued.

217. PROCESSES, PREPARATION OF MOLD MATERIALS. Processes of the same character and scope as the apparatus included in subclass 89, Mold-material-treating apparatus.

Search Class—

22—METAL-FOUNDING, subclass 89, Mold-material-treating apparatus.

218. INGOTS. Improvements in cast-metal ingots composed of a single metal.

Search Class—

22—METAL-FOUNDING, subclasses 139, Molds, Metal, Ingots and pigs; 140, Molds, Metal, Ingots and pigs, Hollow; 143, Molds, Metal, Ingots and pigs, Horizontal, and 145, Molds, Metal, Ingots and pigs, Separable sides.

CLASS 22—Continued.

219. INGOTS, COMPOSITE. Improvements in cast-metal ingots composed of two or more metals or one or more metals and a non-metal.

Search Classes—

22—METAL-FOUNDING, subclasses 121, Molds, Composite castings and joints, Ingots, and 201, Processes, Casting, Composite article, and the subclasses thereunder

29—METAL-WORKING, subclasses 181 *et seq*, Metal stock, Compound.

49—GLASS, subclass 92, Structure.

CLASS 24.—BUCKLES, BUTTONS, CLASPS, ETC.

DEFINITIONS.

Class.

This class is to provide a place for buckles, buttons, clasps, cord and rope holders, pins, separable fasteners, etc., which have become so varied in use and so allied in structure as to belong to no specific art, but are novel only as to their structures. There are, however, several classes of fastenings included where the devices are but slightly identified with the art and are closely analogous to the main titles above cited. Such patents are retained under more or less art titles. Devices which embrace fastenings as above, but also include elements which connect them with various specific arts, have been excluded as far as practicable.

The fastenings have been classified structurally as far as possible, and where two or more simple fastenings are contained in one structure, it is found in classes indicating the kinds of fastenings so combined. This scheme is followed also throughout those art classes which have been retained, where possible.

Search should be made in class 241, GARMENT-SUPPORTERS, for fastening devices which have special functions in connection with clothing, such as devices for connecting waists and skirts, garment-supporters, and suspenders.

All parts making up a suspender are also found under class 241, GARMENT-SUPPORTERS, except buckles, clasps, and cast-offs, where the cast-off is nothing more than a snap-hook or a separable fastening, in which case search subclasses under this class.

Subclasses.

1. MISCELLANEOUS. Such devices as are considered a part of this class and not otherwise classifiable.
2. ALBUM-FASTENERS. Devices specially adapted for the purpose of keeping albums and other books closed when not in use.
3. ARTICLE-HOLDERS. Devices usually in the nature of a clasp for fastening or holding articles which are to be carried about on the clothing, such as pencils, flowers, napkins, spectacles, spectacle-cases, scissors, etc. Devices which are not specially adapted for carrying specific articles are classified as structures under appropriate subclasses.
Note.—Such devices as are not mere article holders for personal wear or use, but in which the idea of transportation prevails, are found in class 224, PACKAGE AND ARTICLE CARRIERS.
Note.—Ticket-holders are found in class 40, CARD, PICTURE, AND SIGN EXHIBITING, under the title Checks, labels, and tags, particularly subclasses 10, Holders, and 11, Holders, Clip.
Search Class—
242—WINDING AND REELING, subclass 136, Spool-holders, Carrier Attachments, for spool-holders attached to the person.
4. ARTICLE-HOLDERS, CHATELAINE SAFETY-HOOKS. These devices are adapted for holding chatelaine-bags. The hook is provided with a safety device to prevent loss of bag.
Search Class—
224—PACKAGE AND ARTICLE CARRIERS, subclass 27, Body and belt attached, Bag, case, or frame, Chatelaine.
5. ARTICLE-HOLDERS, FLOWER. Devices designed especially to hold flowers in those cases where the flowers are to be attached to the clothing.
Search Class—
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 10, Article-holders, Pencil; 11, Article-holders, Pencil, Clasp-attached, and 12, Article-holders, Pencil, Pin-attached.
6. ARTICLE-HOLDERS, FLOWER, PIN-ATTACHED. Holders attached by means of a pin fastening.
Search Class—
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 12, Article-holders, Pencil, Pin-attached.
7. ARTICLE-HOLDERS, NAPKIN. Devices containing features which make them specially adapted for use as napkin-holders. Includes holders which are convertible into napkin-rings when desired.
Search Class—
65—KITCHEN AND TABLE ARTICLES, subclass 29, Napkin-holders, for mere napkin-rings and napkin-holders attached to the table and the like.
8. ARTICLE-HOLDERS, NAPKIN, HOOK. Holders attached to the clothing by a hook.
9. ARTICLE-HOLDERS, NAPKIN, NECK-INCLOSING. Holders encircling the neck of the wearer.
10. ARTICLE-HOLDERS, PENCIL. Devices specially adapted for the purpose of holding pencils and like articles in pockets, including pencil-holders attached to the clothing. Patents are excluded which are for devices intended to close the mouth of the pocket, even when there is some special arrangement connected with the pocket-closure for holding a pencil.
Search Classes—
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 5, Article-holders, Flower, and 6, Article-holders, Flower, Pin-attached.
2—APPAREL, subclass 15, Nether garments, Pockets.

CLASS 24—Continued.

- 120—STATIONERY, subclass 84, Pencils, Attachments, for pencil-holders which are a permanent part of the pencil; subclasses 102, Penholders, Grips; 103, Penholders, Grips, Detachable, and 106, Penholders, Slant devices, for pencil-holders which consist of a ring on the finger with a pencil-holding attachment.
- 150—CLOTH, LEATHER, AND RUBBER RECEPTACLES, subclass 34, Porte-monnaies and pocketbooks, Article holding.
11. ARTICLE-HOLDERS, PENCIL, CLASP-ATTACHED. Pencil-holders which are attached to the clothing by means of a clasp.
12. ARTICLE-HOLDERS, PENCIL, PIN-ATTACHED. Attached by means of a pin-fastening.
Search Class—
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 6, Article-holders Flower, Pin-attached.
13. ARTICLE-HOLDERS, PIN-ATTACHED. Article-holders which have a pin attachment and are not classifiable in other specific subclasses.
Search Classes—
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 86, Fasteners combined, Pin-hook.
242—WINDING AND REELING, subclass 98, Reeling and Unreeling, Reels, Carriers, Hand or body, Spring drum article holders; also subclass 136, Spool-holders, Carrier attachments, for spool-holders attached to the person by a pin-fastening.
14. ABOLISHED.
15. ARTICLE-HOLDERS, SLEEVE. Devices for holding the inner coat-sleeve while an outer coat is being put on. This subclass also includes other sleeve-holders which do not come under the above definition, but are placed there because they are sleeve-holders nominally.
16. BALE AND PACKAGE TIES. Devices which are especially adapted for bundling papers, bales, packets, etc.
Note.—Devices for holding the ends of cords or ropes are found under Cord and rope holders, in this class.
Note.—Barrel-hoops consisting of a strip, with means for securing the ends together, except for tightening the hoop, are included under this title. All other barrel-hoops are found in class 217, WOODEN RECEPTACLES, under the title of Hoops.
Search Class—
217—WOODEN RECEPTACLES, subclasses 66, Boxes, Straps; 67, Boxes, Straps, Corrugated, and 68, Boxes, Straps, Wire, for devices similar to bale-ties, but adapted for use on wooden packages by reason of fastenings.
17. BALE AND PACKAGE TIES, PACKET-HOLDERS. Devices specially adapted for bundling or packing such articles as sheet-paper, currency, gloves, and the like, but excludes such as are receptacles. They consist of various arrangements of bands, straps, cords, and wires in connection with some form of tying or fastening means. On account of the close similarity in structure umbrella-ties, trunk-strap fastenings, bag-holders, etc., have been included where the invention is not classifiable as a fastening device simply.
Note.—Bag-fasteners which are peculiarly adapted for closing bags are excluded—for example, where the closure is of rigid material conforming to the shape of the bag-neck and where the closure is a part of the bag or is woven into the bag.
Search Classes—
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 66, Paper-clips, for devices adapted for holding the edges or ends of a number of sheets of paper so as to permit writing on same or reference to individual sheets.
70—LOCKS AND LATCHES, subclasses 100, Seals, Box and bag, and 101, Seals, Box-strap, for devices which seal the package in addition to bundling.
100, PRESSES, subclass 14, Baling, Articles and attachments, Bales and bale-covers.
190—BAGGAGE, subclass 27, Trunks, Harness, for combinations of straps suitable for securing trunks in their closed position or straps attached to the trunks.
224—PACKAGE AND ARTICLE CARRIERS, all subclasses under the subtitle Hand, for similar devices in which a handle or a carrying device is included.
229—PAPER RECEPTACLES, subclass 78, Envelopes, Closures, Fasteners, Metallic.
241—GARMENT-SUPPORTERS, subclass 5, Limb-encircling.
18. BALE AND PACKAGE TIES, PACKET-HOLDERS, CORD. Packet-holders which make use of cord or rope and have a metallic fastener for holding the ends.
Note.—These are distinguished from cord and rope holders in having a fastener which provides for the cord passing about the package in two directions.
Search Classes—
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 115, Cord and rope holders, when the cord-holder is intended for cords which only pass around the package in one direction, subclass 17, Bale and package ties, Packet-holders, for devices in which cord is made use of as a part of the holder, but do not come under the definition of Packet-holders, Cord.

CLASS 24—Continued.

- 70—LOCKS AND LATCHES, subclasses 100, Seals, Bag and box, and 101, Seals, Box-strap, for devices which seal the package in addition to bundling.
224. PACKAGE AND ARTICLE CARRIERS, subclasses 56, Hand, Handle and strap, Cord or chain, and 57, Hand, Handle and strap, Cord or chain, Cord-hook.
19. BALE AND PACKAGE TIES, STRAP-TIGHTENERS. Devices used as bale-ties, trunk-straps, and similar articles in which there is some means for tightening the band, such as a pivoted lever or a turnbuckle.
- Search Classes—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses under 68, Strap-tighteners.
21—CARRIAGES AND WAGONS, subclass 110, Tires, Metallic.
54—HARNESS, subclass 27, Harnes, Fasteners, Lever.
100—PRESSES, subclass 15, Baling, Articles and attachments, Bale-band tighteners.
214—LOADING AND UNLOADING, subclass 5, Loading and unloading, Load-binders.
217—WOODEN RECEPTACLES, subclasses 94, Barrels, Hoops, Tighteners, and 95, Barrels, Hoops, Tighteners, Screw.
224—PACKAGE AND ARTICLE CARRIERS, subclass 51, Hand, Handle and clamping-plates, Strap-tightener.
20. BALE AND PACKAGE TIES, METAL BANDS. The tie is a metallic band, and the connection is made by means of some integral part of the band, either by bending, cutting, or forming up a portion of the same. Devices are also included where the invention lies in the band itself.
21. BALE AND PACKAGE TIES, METAL BANDS, SEPARATE CONNECTIONS. The metal band is connected by means of a separate part or parts.
22. BALE AND PACKAGE TIES, METAL BANDS, SEPARATE CONNECTIONS, ONE-PIECE. The separate connection is made of one piece.
23. BALE AND PACKAGE TIES, METAL BANDS, SEPARATE CONNECTIONS, ONE-PIECE, SHEET-METAL. The connection is made of sheet metal in one piece.
24. BALE AND PACKAGE TIES, METAL BANDS, SEPARATE CONNECTIONS, PIVOTED PARTS. The connecting parts are pivoted together.
25. BALE AND PACKAGE TIES, METAL BANDS, SEPARATE CONNECTIONS, WEDGING PARTS. Wedges or rolls are used to clamp the band in the connection.
26. BALE AND PACKAGE TIES, METAL BANDS, SEPARATE CONNECTIONS, WIRE. The connection is made of wire.
27. BALE AND PACKAGE TIES, WIRE. The tie is composed of wire, having the ends so made or formed as to be capable of fastening without other parts.
28. BALE AND PACKAGE TIES, WIRE, SEPARATE CONNECTIONS. A wire tie fastened by means of a separate connection.
29. BALE AND PACKAGE TIES, WIRE, SEPARATE CONNECTIONS, WIRE. A wire tie has a separate connection, which is also of wire.
30. BALE AND PACKAGE TIES, WOODEN BANDS. The tie is made of wood and is usually used as a barrel-hoop. Some are made with a separate metallic connecting part.
- 30.5. BAG-FASTENERS. Devices fastening around the neck of a bag for holding the same closed.
31. BELT-FASTENERS. Devices specially adapted for connecting together the ends of driving-belts.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 123, Cord and rope holders, Couplings and sockets, for couplings or fasteners for round belts or ropes; 124, Cord and rope holders, Couplings and sockets, Nut-clamp, and 125, Cord and rope holders, Couplings and sockets, Screw-clamp.
32. BELT-FASTENERS, TIGHTENERS. Devices which connect the belt ends and have the additional function of permitting adjustment at any time when the belt is too loose or too tight.
- Note.**—These devices are to be distinguished from class 57, Hoisting, subclass 120, Belt-stretchers, and the subclasses thereunder, where the device is used for drawing together the belt ends for the purpose of lacing or connecting; also, from class 69, LEATHER MANUFACTURES, subclass 1.5, Machines, Belt-stretching, where the initial stretch is taken out of the belt.
33. BELT-FASTENERS, HINGED. The fastener is hinged so as to facilitate its passage over the pulley.
34. BELT-FASTENERS, LACING. Includes the various arrangements for lacing belts where flexible laces are used.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 39, Belt-fasteners, Wire, for wire lacing; 140, Lacing devices; 143, Lacing devices, Laces and tips, for the lace itself.
35. BELT-FASTENERS, ONE-PIECE. All belt-fasteners which are made of a single integral piece for the entire connection or joint.

CLASS 24—Continued.

36. BELT - FASTENERS, ONE - PIECE, DEFLECTING PRONG. Includes those one-piece connections in which prongs are passed through the belt and are then bent or turned over to complete the fastening.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 31, Belt-fasteners, for rivet-fastenings and all deflecting-prong fastenings which are not properly a part of this subclass; 94, Buttons and fasteners, Deflecting prong, or rivet; 95, Buttons and fasteners, Deflecting prong or rivet, Anvil or plate, and 96, Buttons and fasteners, Deflecting prong or rivet, Integral.
37. BELT-FASTENERS, SCREW-CLAMP. The connecting part or plate is fastened to the belt ends by screws.
38. BELT-FASTENERS, SPLICES. The belt ends are cut in various ways and spliced together to make the connection.
39. BELT-FASTENERS, WIRE. The belt-fastener is made of wire. This subclass includes wire-lacing devices.
- Note.**—Belt-fasteners for round belts or driving-ropes are found under subclass 123, Cord and rope holders, Couplings and sockets.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 143, Lacing devices, Laces and tips, for flexible laces and tips for same.
40. BUTTONERS. Devices for drawing a button into engagement with a buttonhole, used principally on gloves, shoes, corsets, collars, and cuffs.
41. CUFF-HOLDERS. Devices specially adapted for the purpose of holding the cuffs in position.
- Note.**—For specific forms of clasps, pins, etc., search the appropriate subclasses under the simple fastening subclasses, such as Pin-fasteners, Clasps, Separable fasteners, etc.
42. CUFF-HOLDERS, ADJUSTABLE. Cuff-holders in which adjustment of the cuff is obtained by means of a special provision in the device.
43. CUFF-HOLDERS, CLASP-BUTTON. These holders have a clasp to grip the sleeve and a button to engage the cuff.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 80, Fasteners combined, Clasp-button.
44. CUFF-HOLDERS, CLASP-CLASP. Holders having a clasp for the cuff and a clasp for the sleeve.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 81, Fasteners combined, Clasp-clasp.
45. CUFF-HOLDERS, CLASP-HOOK. Holders having a clasp for the sleeve and a hook to engage the buttonhole of the cuff.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 84, Fasteners combined, Clasp-hook.
46. CUFF-HOLDERS, CLASP-PIN. Holders having a clasp at one end of the same and a pin-fastening at the other end.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 85, Fasteners combined, Clasp-pin.
47. CUFF-HOLDERS, PIN-BUTTON. The combination of a pin-fastening for the sleeve and a button for the cuff.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 73, Fasteners combined.
48. CUFF-HOLDERS, PIN-FASTENER. Holders having a pin-fastening at one end and any form of attachment at the other end, except where there are specific subclasses covering the combination.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 73, Fasteners combined, 86, Fasteners combined, Pin-hook, and 87, Fasteners combined, Pin-pin.
49. NECKTIE-FASTENERS. Devices specially adapted for holding the necktie in its proper position, excluding the devices which consist of a tip on the band end designed to lock in some part of the necktie after having been adjusted. Devices for engaging the fabric of the band itself are included.
- Note.**—Where there is any device, even in combination with a fastener, which is necessary or requisite in the formation of the tie, the patents are excluded, being classified in class 2, APPAREL, subclass 11, Body-garments, Neckties.
50. NECKTIE-FASTENERS, BANDS. Devices specially adapted for fastening the band of a necktie, either to prevent the same from riding up on the collar or for the purpose of connecting the ends of the bands together.
- Search Class—**
2—APPAREL, subclass 85, Body-garments, Neckties, Tips, for special forms of band-tips used in connection with a device on the necktie itself for fastening the same.
51. NECKTIE-FASTENERS, BANDS, END-SECURING PIN. A pin device is used to hold the band after being drawn up to its proper position about the collar.
52. NECKTIE-FASTENERS, BANDS, GRIPPING. A band-holding device consisting of a clasp for gripping the same.

CLASS 24—Continued.

53. NECKTIE-FASTENERS, BANDS, DEPRESSORS. Devices which are specially designed to prevent the necktie-band from riding up over the collar.

Search Class—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 62, Necktie-fasteners, Collar-button combined, Clasp-attached.

54. NECKTIE-FASTENERS, BANDS, DEPRESSORS, BUTTON-ENGAGING. These devices prevent the necktie-band from riding up on the collar by means of a connection with the collar-button.

55. NECKTIE-FASTENERS, BANDS, DEPRESSORS, PIN OR SPUR. The necktie-band is prevented from riding up on the collar by pin or spur attached devices.

56. NECKTIE-FASTENERS, BUTTON-ENGAGING. Devices attached to the necktie proper and adapted for engaging the collar-button to hold the necktie in place.

57. NECKTIE-FASTENERS, BUTTON-ENGAGING, ADJUSTABLE. These necktie-fasteners have some means for adjusting the position of the necktie.

58. NECKTIE-FASTENERS, BUTTON-ENGAGING, CORD-LOOP. A cord loop engages the collar-button.

59. NECKTIE-FASTENERS, BUTTON-ENGAGING, PIVOTED OR SLIDING JAW. The button engagement is obtained with the aid of pivoted or sliding jaws.

60. NECKTIE-FASTENERS, BUTTON-ENGAGING, PIN-ATTACHED. These fasteners have some form of pin-fastening to engage the necktie.

Search Class—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 56, Necktie-fasteners, Button engaging, for those devices which include mere wire attachment or those in which the prongs are bent over to permanently fasten the device.

61. NECKTIE-FASTENERS, COLLAR-BUTTON COMBINED. The necktie-fastener is combined with a collar-button.

62. NECKTIE-FASTENERS, COLLAR-BUTTON COMBINED, CLASP-ATTACHED. The necktie-fastener consists of a collar-button with a clasp attached to hold the necktie.

63. NECKTIE-FASTENERS, COLLAR-BUTTON COMBINED, PIN-ATTACHED. The necktie-fastener consists of a collar-button having a pin-fastening attached for holding the necktie in place.

64. NECKTIE-FASTENERS, COLLAR-BUTTON COMBINED, SEPARABLE FASTENER. The necktie-fastener consists of a collar-button in which some form of separable fastener is used to connect the same to the necktie attachment.

65. NECKTIE-FASTENERS, TIE-ATTACHED HOOK. Necktie-fasteners which consist of a hook which engages over the collar or neckband.

66. PAPER-CLIPS. Devices specially adapted for use as clips for temporarily holding paper in sheets. If the device has no special features, it is classified under the appropriate subclass under Clasps.

Note.—Under subclass 17, Bale and package ties, Packet-holders, are placed devices somewhat similar to paper-clips, but are designed to bundle up or pack the paper, and consequently would not be suitable for writing purposes.

Search Classes—

120—STATIONERY, subclass 28, Copyholders.

129—PAPER FILES AND BINDERS, subclass 35, Clamping, and the subclasses thereunder, for devices somewhat analogous to paper-clips, but containing features which connect them more closely with class 129 than with class 24. These subclasses should therefore be regarded in making a complete search along this line.

67. PAPER-FASTENERS. Devices specially adapted for fastening together two or more sheets, papers, documents, and the like, excluding clasps of a general nature.

Search Class—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 153, Pin-fasteners, Paper; 154, Pin-fasteners, Paper, Suspending devices, and 155, Pin-fasteners, Loss-preventing devices; and for mere clasps, subclass 243, Clasps, and particularly subclasses 255, Clasps, Resilient; 259, Clasps, Resilient, Sheet-metal, and 261, Clasps, Resilient, Wire.

68. STRAP-TIGHTENERS. Devices usually used in place of buckles on shoes, gloves, corsets, belts, etc. The distinction from other forms of fastenings lies in the drawing-up or strap-tightening feature of the device.

Search Classes—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 19, Bale and package ties, Strap-tighteners.

36—BOOTS, SHOES, AND LEGGINGS, subclass 64, Antislipping devices, Detachable, Clamping.

54—HARNESS, subclass 27, Hames, Fasteners, Lever.

69. STRAP-TIGHTENERS, CAM-LEVER AND LOOP. Levers usually pivoted, pass through a loop and are turned down, the parts being drawn together by this movement.

Search Class—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 19, Bale and package ties, Strap-tighteners.

CLASS 24—Continued.

70. STRAP-TIGHTENERS, CAM-LEVER AND LOOP, STEP-ADJUSTED. The device is adjusted by means of a step-by-step movement.

Search Class—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 19, Bale and package ties, Strap-tighteners.

71. STRAP-TIGHTENERS, STRAP-ATTACHED FOLDING-LEVER. In this case the lever and the strap are permanently connected together.

Search Classes—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 19, Bale and package ties, Strap-tighteners.

36—BOOTS, SHOES, AND LEGGINGS, subclass 64, Antislipping devices, Detachable, Clamping.

72. TROUSER GUARDS AND STRAPS. Devices specially adapted for binding or holding the lower part of the trousers and also devices for strapping the trousers down to the shoe.

Search Classes—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 256, Clasps, Resilient, Circular.

2—APPAREL, subclasses 124, Nether garments, Edge-protectors, and 135, Nether garments, Skirt-protectors.

36—BOOTS, SHOES, AND LEGGINGS, subclasses 56, Uppers, Pulls, and 70, Garment-protectors.

73. FASTENERS COMBINED. Otherwise unclassified combinations of two or more simple forms of fastenings. If there is no specific subclass covering the combination, they will be found in the miscellaneous subclass.

Note.—For various combinations search in this class, sub-classes 41, Cuff-holders, and 42, Cuff-holders, Adjustable.

For buckle-hook search the several subclasses under Buckles, in which "hook-attached" is found.

For the specific fastening search in this class the subclass defining the structure.

Search Class—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 3, Article-holders, and the subclasses thereunder; 63, Necktie-fasteners, Collar-button combined, Pin-attached, 103, Buttons and fasteners, Pin-attached, and 165, Buckles, Harness, Combined buckles and snap-hooks.

74. FASTENERS COMBINED, BUCKLE-BUCKLE. Two or more buckles are combined. Harness-buckles with a plurality of tongues or studs are excluded.

Search Class—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 177, Buckles, Harness, Penetrating-tongue, Multiple.

75. FASTENERS COMBINED, BUCKLE-BUCKLE, SEPARABLY-CONNECTED. A separable fastening intervenes between the two or more buckles.

76. FASTENERS COMBINED, BUCKLE-PIN. The combination of a buckle and a pin.

77. FASTENERS COMBINED, BUCKLE SEPARABLE. The combination of a buckle and a separable fastening.

78. FASTENERS COMBINED, BUCKLE SEPARABLE, PIVOTED-LEVER BUCKLE. The combination of a buckle and a separable fastening when the buckle is a pivoted-lever buckle.

79. FASTENERS COMBINED, CLASP-BUCKLE. The combination of a clasp and a buckle.

80. FASTENERS COMBINED, CLASP-BUTTON. The combination of a clasp and a button.

Search Class—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 43, Cuff-holders, Clasp-button, and 62, Necktie-fasteners, Collar-button combined, Clasp-attached.

81. FASTENERS COMBINED, CLASP-CLASP. The combination of a clasp and a clasp.

Search Classes—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 44, Cuff-holders, Clasp-clasp; 5, Article-holders, Flower, and 11, Article-holders, Pencil, Clasp-attached.

40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 11, Checks, labels, and tags, Holders, Clip.

82. FASTENERS COMBINED, CLASP-CLASP, PIN-ATTACHED. The combination of a clasp and a clasp with the additional fastening devices consisting of a pin-fastening.

83. FASTENERS COMBINED, CLASP-CLASP, SEPARABLY-CONNECTED. The combination of a clasp and a clasp, but connected by means of a separable fastening.

84. FASTENERS COMBINED, CLASP-HOOK. The combination of a clasp and hook.

Search Classes—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 8, Article-holders, Napkin, Hook, and 45, Cuff-holders, Clasp-hook.

40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 11, Checks, labels, and tags, Holders, Clip for mere portable or pocket hooks.

248—SUPPORTS, subclass 22, Hooks.

85. FASTENERS, COMBINED, CLASP-PIN. The combination of a clasp and a pin.

CLASS 24—Continued.

Search Classes—

- 24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 6, Article-holders, Flower, Pin-attached; 12, Article-holders, Pencil, Pin-attached; 13, Article-holders, Pin-attached, and 46, Cuff-holders, Clasp-pin.
- 40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 11, Checks, labels, and tags, Holders, Clip.
86. FASTENERS COMBINED, PIN-HOOK. The combination of a pin and a hook.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 48, Cuff-holders, Pin-fastener.
87. FASTENERS COMBINED, PIN-PIN. The combination of a fastener and a pin.
88. FASTENERS COMBINED, PIN-PIN, SEPARABLY-CONNECTED. The combination of a pin and a pin with a separable fastening intervening.
89. INTERCHANGEABLE BUTTON-LOOP AND PIN. Devices provided with button-engaging parts and also with a pin-fastening, the pin-fastening being designed to be used when the other fastening gives out for any reason.
90. BUTTONS AND FASTENERS. Buttons as articles and the various means for fastening the same on the garment not provided for in the specific subclasses.
- Search Class—**
41—ORNAMENTATION, for ornamental features which might be applied to buttons; also in class 165 DESIGNS, for buttons.
91. BUTTONS AND FASTENERS, ADJUSTABLE. Buttons usually used as collar-buttons in which there is some means for adjusting the button.
92. BUTTONS AND FASTENERS, CLOTH SHANKS AND COVERS. The button has a shank made of cloth for use in attaching the button, and also includes buttons covered with cloth.
93. BUTTONS AND FASTENERS, MULTIPLE ATTACHMENT. Several buttons are fastened on by means of a common fastener.
94. BUTTONS AND FASTENERS, DEFLECTING PRONG OR RIVET. A fastener for a button in which metal prongs or rivets are bent over or upset in attaching the button.
95. BUTTONS AND FASTENERS, DEFLECTING PRONG OR RIVET, ANVIL OR PLATE. The button is provided with a part which deflects the prongs by contact and pressure thus doing away with riveting-tools.
96. BUTTONS AND FASTENERS, DEFLECTING PRONG OR RIVET, INTEGRAL. The prongs or rivets are a part of the button or are firmly attached and are pushed through the material, being clenched on the opposite side. Those using washers are also included if they have no part in deflecting the prongs.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 146, Lacing devices, Studs, Hook.
97. BUTTONS AND FASTENERS, HINGED-LEAF. This button is of the type in which movable leaves permit the easy insertion of the button in the buttonhole, after which the leaves prevent the withdrawal of the button.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 212, Separable fasteners, Head and socket, Axial closures, Pivoted-head.
98. BUTTONS AND FASTENERS, HINGED-LEAF, AXIALLY-ROTATING. The leaves swing about the axis of the button.
99. BUTTONS AND FASTENERS, HINGED-LEAF, DOUBLE. There are two hinged leaves. It does not include those in which there is one hinged leaf and one rigid leaf, these being found in subclass 97, Buttons and fasteners, Hinged-leaf.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 97, Buttons and fasteners, Hinged-leaf.
100. BUTTONS AND FASTENERS, HINGED-LEAF, SLIDING. There is a sliding movement of the leaf. It includes those in which there is a combined pivoted and sliding movement.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 100.5, Buttons and fasteners, Sliding-bar.
- 100.5. BUTTONS AND FASTENERS, SLIDING-BAR. Buttons having a transversely sliding member which is retracted for the purpose of removing the button.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 100, Buttons and fasteners, Hinged-leaf, Sliding.
101. BUTTONS AND FASTENERS, INTEGRAL OR RIGID STUD. This subclass includes buttons of the collar or cuff button type which are either made of one piece or are so built up as to be a rigid button when complete, and thus equivalent to an integral button. Other one-piece buttons, such as those which are to be sewed on, are classified in subclass 90, Buttons and fasteners.

CLASS 24—Continued.

Search Class—

- 24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 114, Buttons and fasteners, Pads, and 146, Lacing devices, Studs, Hooks.
102. BUTTONS AND FASTENERS, LINKS. Buttons with two heads, adapted for use in cuffs.
103. BUTTONS AND FASTENERS, PIN-ATTACHED. Buttons, badges, etc., which are attached to the garment by means of a pin, provided the invention lies in the pin-fastening.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 63, Necktie-fasteners, Collar-button combined, Pin-attached.
104. BUTTONS AND FASTENERS, SEPARABLE. Buttons of the type in which two parts are adapted to be joined together or separated at will.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 201, Separable fasteners, and the subclasses thereunder, and 64, Necktie-fasteners, Collar-button combined, Separable fastener for the separable fasteners *per se*.
105. BUTTONS AND FASTENERS, SEPARABLE, SCREW. One part is screwed into another part.
106. BUTTONS AND FASTENERS, SEPARABLE, SPRING. The two parts are sprung together.
107. BUTTONS AND FASTENERS, SEPARABLE, SPRING, RESILIENT-HEAD. These buttons have resilient or spring heads and rigid sockets.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 110, Buttons and fasteners, Separable, Spring, With operating devices.
108. BUTTONS AND FASTENERS, SEPARABLE, SPRING, RESILIENT-SOCKET. In this subclass the socket member contains the resilient part.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 110, Buttons and fasteners, Separable, Spring, With operating devices.
109. BUTTONS AND FASTENERS, SEPARABLE, SPRING, ROTATING-HEAD. The head is rotated to connect or disconnect the two members.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 221, Separable fasteners, Head and socket, Axial closures, Rotating-head.
110. BUTTONS AND FASTENERS, SEPARABLE, SPRING, WITH OPERATING DEVICES. The two parts are sprung together, and there is some independent device which must be operated to release the parts.
111. BUTTONS AND FASTENERS, SEPARATE THREAD-BAR. The thread-bar is a separate piece.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 90, Buttons and fasteners, for integral and other thread-bars.
112. BUTTONS AND FASTENERS, SPIRAL FASTENER. The engaging part is a spiral which is screwed into the buttonhole.
113. BUTTONS AND FASTENERS, COVERS. The invention lies in the cover of the button or in the mode of applying the same. Usually the idea is to permit the use of various covers as occasion arises.
- Note.**—Where the device is for attaching stones or like ornaments, even though to a button, and the device is not peculiar to buttons, search class 63, JEWELRY, subclass 26, Gem-settings, and the subclasses thereunder.
114. BUTTONS AND FASTENERS, PADS. Protecting-pads so attached to the buttons that metallic contact with the skin is prevented.
115. CORD AND ROPE HOLDERS. Devices for gripping and holding cord, rope, and, in some cases, chain, when the device is analogous. Includes devices used in holding lace ends on gloves and shoes. These latter are classified under the head of Lacing-terminals. Devices for holding or gripping the end of a strap or band, but which are not properly buckles, have been placed in Rope-holders. These devices are usually as well adapted for rope as for bands and are more commonly used as hitching-strap holders.
- Note.**—The title Cord and rope holders excludes those devices in which a pulley by its peculiar construction acts as the rope grip and also those in which a clamping part cooperates with a pulley to grip the rope, these devices being classified in class 57, HOISTING, subclass 34, Block and tackle; but where a mere guide bar or pulley is included as an independent element or where any form of pivoted cam is found it is not considered to be a pulley, and the patents are classified under the title of Cord and rope holders.
- Search Classes—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 18, Bale and package-ties, Packet-holders, Cord for packet-holders; 123, Cord and rope holders, Couplings and sockets; 124, Cord and rope holders, Couplings and sockets, Nut-clamp; and 140, Lacing devices, and the subclasses thereunder for devices specially adapted for lacing.
- 16—BUILDERS' HARDWARE, subclasses under Ferrules, rings, and thimbles, for devices which bind the end of cord or rope to prevent fraying.
- 39—FENCES, subclasses 53, Grips, and 112, Wire, Stays, Wire.

CLASS 24—Continued.

- 40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 145.8, Picture-hangers, Retaining-cord.
- 68—LAUNDRY, subclasses 3, Clothes-lines, and 12, Clothes-line fasteners, for cord and rope holders specially adapted for clothes-line supports or reels and for clothes-lines proper.
- 104—RAILWAYS, subclass 35, Grippers, and the subclasses thereunder for cable-grippers analogous in some respects to cord and rope holders.
- 114—SHIPS, subclasses 199, Cable stoppers, 218, Bitts, cleats and pin-rails, 225, Implements; Spikes, pins, and fids, 226, Implements, Clamps, for devices analogous to cord and rope holders, but specially adapted for ship use.
- 166—ARTESIAN AND OIL WELLS, subclasses 3, Drilling and boring, and 7, Tube-clamps.
- 214—LOADING AND UNLOADING, subclass 19, Elevated carriers, Rope-catch, for pulleys and rope-clamps.
- 227—FIRE-ESCAPES, subclass 13, Hand-protectors, for devices held in the hand to grip a rope.
- 229—PAPER RECEPTACLES, subclasses 46, Boxes, Closures, Fasteners, Cord; 63, Bags, Closures, Cord, and 77, Envelopes, Closures, Fasteners.
- 242—WINDING AND REELING, subclass 126, Bobbins and spools, Thread fasteners and guides, Separable, for devices which hold a thread similar to cord and rope holders.
116. CORD AND ROPE HOLDERS, CHAIN. Devices similar to cord-holders but in which a chain is held instead of a cord.
117. CORD AND ROPE HOLDERS, LACING-TERMINALS. Cord-holders specially fitted for use in holding the shoe or glove lace after lacing. Includes devices for preventing the untying of bow-knots as applied to shoes, etc.
118. CORD AND ROPE HOLDERS, LACING-TERMINALS, FRICTION-DISK. A disk holds the lace by friction after being wound about a central portion.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 127, Cord and rope-holders, Friction-disk.
119. CORD AND ROPE HOLDERS, LACING-TERMINALS, KNOT-INCLOSING. Devices which prevent the bow-knot from untying.
120. CORD AND ROPE HOLDERS, LACING-TERMINALS, PIVOTED-JAW. The gripping of the lace is due to the action of a pivoted part.
121. CORD AND ROPE HOLDERS, LACING-TERMINALS, RESILIENT-CLIP. A spring-clip catches the lace and prevents it from loosening.
Note.—For other forms of resilient clips see Clasps, under this class.
122. CORD AND ROPE HOLDERS, LACING-TERMINALS, WIRE. The device is made of wire, usually in one piece.
123. CORD AND ROPE HOLDERS, COUPLINGS AND SOCKETS. This title includes all devices adapted for connecting together cord and rope ends, round leather belts, etc., including those in which a rope-gripping means is shown in combination with a coupling. Rope-sockets of the blind-end type are also included as being ordinarily used in connection with a coupling, though some are shown as connected with snap-hooks and the like.
- Search Classes—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 33, Belt-fasteners, Hinged.
59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 95 Chains, Swivels, for swivels.
64—JOURNAL-BOXES, PULLEYS, AND SHAFTING, subclass 13, Shaft-couplings, for other coupling devices.
103—PUMPS, subclass 61, Elements, Miscellaneous and combined.
137—WATER DISTRIBUTION, subclass 28, Pipe-couplings, Detachable.
166—ARTESIAN AND OIL WELLS, subclass 7, Tube-clamps, for analogous devices used to clamp rods and tubes.
173—ELECTRICITY, CONDUCTORS, subclass 263, Connectors, Wire-splices, for wire-couplings analogous to cord and rope couplings.
124. CORD AND ROPE HOLDERS, COUPLINGS AND SOCKETS, NUT-CLAMP. A nut and threaded sleeve, usually split, constitute the rope-clamping means.
125. CORD AND ROPE HOLDERS, COUPLINGS AND SOCKETS, SCREW-CLAMP. A screw or bolt passes through the device and is the means used to connect the rope to the coupling.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 135, Cord and rope holders, Screw-clamp, where the rope-grip of this type is desired.
126. CORD AND ROPE HOLDERS, COUPLINGS AND SOCKETS, SLIDING PART OR WEDGE. The rope is gripped by means of a sliding collar on a tapering sleeve, or a wedge-block is used.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 136, Cord and rope holders, Sliding part or wedge, where the rope-grip of this type is desired.
127. CORD AND ROPE HOLDERS, FRICTION-DISK. The cord or rope is wound around a central portion and is held by a disk, which frictionally engages the cord.

CLASS 24—Continued.

- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 118, Cord and rope holders, Lacing-terminals, Friction-disk.
128. CORD AND ROPE HOLDERS, KNOT-ENGAGING. The cord is knotted at suitable points and the holding device is designed to make use of the knots to hold the cord after tightening.
129. CORD AND ROPE HOLDERS, ONE-PIECE. Includes all cord-holders in which only one integral piece is used.
- Search Classes—**
73—ELECTRICITY, CONDUCTORS, subclass 28, Insulators.
227—FIRE-ESCAPES, subclass 28, Rope-brakes, Tortuous.
130. CORD AND ROPE HOLDERS, ONE-PIECE, WEDGE SLOT. A V-shaped slot catches the cord or rope when properly positioned.
131. CORD AND ROPE HOLDERS, ONE-PIECE, WIRE. The device is made of wire.
132. CORD AND ROPE HOLDERS, PIVOTED-PART. A pivoted part enters into the construction of the rope-gripping device.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 120, Cord and rope holders, Lacing-terminals, Pivoted-jaw.
133. CORD AND ROPE HOLDERS, PIVOTED-PART, LEVER-TENSION. An extra lever or arm projects from this device, and the rope passing over the same by its tension forces the pivoted part into closer engagement with the rope.
134. CORD AND ROPE HOLDERS, PIVOTED-PART, CAM-LEVER. The pivoted part is so constructed that tension on the rope pulls the pivoted part more tightly into the rope, the pivoted part being either cam-shaped or equivalent thereto in its action.
- Search Classes—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 133, Cord and rope holders, Pivoted-part, Lever-tension.
227—FIRE-ESCAPES, subclasses 25, Rope-brakes, Grip-jaw, and 29, Rope-brakes, Tortuous and grip.
135. CORD AND ROPE HOLDERS, SCREW-CLAMP. The clamping is caused by turning a screw or bolt either in a nut or a part of the device itself.
- Search Classes—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 125, Cord and rope holders, Couplings and sockets, Screw-clamp.
173—ELECTRICITY, CONDUCTORS, subclasses 28, Insulators, and 259, Connectors, Binding-posts.
227—FIRE-ESCAPES, subclasses 26, Rope-brakes, Grip-jaw, Screw-operated, and 30, Rope-brakes, Tortuous and screw-operated grip.
136. CORD AND ROPE HOLDERS, SLIDING PART OR WEDGE. A sliding movement is used in clamping the cord. It includes wedges which slide and like devices.
- Search Classes—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 126, Cord and rope holders, Couplings and sockets, Sliding part or wedge; 171, Buckles, Harness, Clamping, Sliding part or wedge, and 194, Buckles, Sliding part or wedge.
39—FENCES, subclass 112, Wire, Stays, Wire.
227—FIRE-ESCAPES, subclass 27, Rope-brakes, Grip-jaw, Wedge.
137. CLOTHES-PINS. Devices specially adapted for fastening clothes on a line. Mere clasps are excluded, and such will be found under the title of Clasps in the appropriate structure subclass.
- Search Class—**
67—LAUNDRY, subclass 3, Clothes-lines, where the clothes-pin is a part of the clothes-line.
138. CLOTHES-PINS, KERF. Clothes-pins usually made of wood and having a tapering slot cut therein for the purpose of engaging or clamping the clothes on the line.
139. CLOTHES-PINS, WIRE. These pins are constructed of wire, as indicated in the title.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 261, Clasps, Resilient, Wire.
140. LACING DEVICES. This title embraces all fastenings which are used in connection with flexible laces, including the laces themselves, and also eyelets: but devices used to hold the lace ends are classified under subclass 117, Cord and rope holders, Lacing-terminals, and the subclasses thereunder.
- Search Classes—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 34, Belt-fasteners, Lacing.
36—BOOTS, SHOES, AND LEGGINGS, subclass 50, Uppers, Closures.
141. LACING DEVICES, EYELETS. Devices for the purpose of forming a protected opening in a fabric. They are usually specially adapted for lacing, but other eyelets are included if there is no other special art classification for them.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 202, Separable fasteners, Buttonhole-protectors.
142. LACING DEVICES, EYELETS, PLASTIC HEAD. The eyelet has a plastic coating, by which it should be understood is meant a covering applied in a plastic or fluid state, subsequently hardening to form the completed eyelet.

CLASS 24—Continued.

143. **LACING DEVICES, LACES AND TIPS.** The construction of the lace itself and the various devices used in tipping the same.
144. **LACING DEVICES, STUDS.** Various forms of guides for the lace, except eyelets, eyelets being distinguished from studs in having an opening entirely through the fabric, while a stud is only used on the surface, the lace not passing through the material.
145. **LACING DEVICES, STUDS, CLOSED-LOOP.** Studs in which the lace must be threaded through a loop, but are still not eyelets which make an opening through the fabric.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 141, Lacing devices, Eyelets, and 149, Lacing devices, Studs, Roller.
146. **LACING DEVICES, STUDS, HOOK.** Studs in the form of hooks for engaging the lace.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 148, Lacing devices, Studs, Plastic-head.
147. **LACING DEVICES, STUDS, MOVING-PART.** Studs having moving parts, except those found in the subclass 149, Lacing devices, Studs, Roller.
148. **LACING DEVICES, STUDS, PLASTIC-HEAD.** Studs in which the plastic coating is the subject of the invention.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 142, Lacing devices, Eyelets, Plastic-head.
149. **LACING DEVICES, STUDS, ROLLER.** Lacing-studs which have roller-bearings for the lace.
150. **PIN-FASTENERS.** All pin-attaching devices of a general nature, except when in combination with some other fastening.
- Note.**—When in combination with some other fastening, search subclass 73, Fasteners combined; also, the various subclasses in this class where a pin or pin-fastening is mentioned in the title.
- Note.**—In class 40, CARD, PICTURE, AND SIGN EXHIBITING, subclasses 1.5, Badges, and 1.6, Badges, Changeable reading, are found pin-fastenings in combination with badge features; but the independent pin constructions are found in this class under Pin-fasteners.
- Note.**—In class 63, JEWELRY, subclass 20, Ornamental pins, are found pin-fastenings in combination with some feature of the brooch or scarf-pin as such; but the independent pin-fastenings are found in this class under Pin-fasteners.
- Search Classes—**
132—TOILET, subclasses 22, Hair-fasteners, for hair-pins, and 25, Hat-fasteners, in which subclasses are found devices for preventing the hat-pin from coming out; but where the device is not attached to the hat in any way, and is thus independent, it is classified in this class under the title of 155, Pin-fasteners, Loss-preventing devices.
- 156—CURTAINS, SHADES, AND SCREENS, subclass 21, Curtain rings and pins, for pin-fastenings in combination with a curtain-pole ring. Where the pin-fastening is independent, it is classified in this class under the title of Pin-fasteners, or under Fasteners combined, where there is a combination of a pin and a hook.
151. **PIN-FASTENERS, ARM-PIT SHIELDS.** Pins specially fitted for use in fastening dress-shields.
152. **PIN-FASTENERS, UPHOLSTERING.** These pins are specially adapted for upholstery.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 153, Pin-fasteners, Paper, and 154, Pin-fasteners, Paper, Suspending devices.
- 85—DRIVEN, HEADED, AND SCREW-THREADED FASTENINGS, subclasses 13, Nails, spikes, and tacks, Multiple-pronged, and 49, Staples.
153. **PIN-FASTENERS, PAPER.** Special fastenings for paper in which a pin or prong passes through the paper.
- Search Classes—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 152, Pin-fasteners, Upholstering.
- 40—CARD, PICTURE, AND SIGN EXHIBITING, subclasses 22, Checks, labels, and tags, Fasteners, Barbed; 23, Checks, labels, and tags, Fasteners, Clasp, and 25, Checks, labels, and tags, Fasteners, Spur.
- 85—DRIVEN, HEADED, AND SCREW-THREADED FASTENINGS, subclasses 13, Nails, spikes, and tacks, Multiple-pronged, and 49, Staples.
- 129—PAPER FILES AND BINDERS, subclass 21, Pins, and the subclasses thereunder for devices which include impaling pins or hooks of a temporary nature; while the subclasses 153, Pin-fasteners, Paper, and 154, Pin-fasteners, Paper, Suspending devices, in this class, contain paper-fasteners which permanently connect together several sheets of paper or the like.
- 211—STORE FURNITURE, subclass 2, Bag and twine holders, Bag-holder, for temporary pin-fastenings.
- 229—PAPER RECEPTACLES, subclass 78, Envelopes, Closures, Fasteners, Metallic.
154. **PIN-FASTENERS, PAPER, SUSPENDING DEVICES.** A means of suspension is a part of the device.
- Search Classes—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 67, Paper-fasteners, and 261, Clasps, Resilient, Wire.

CLASS 24—Continued.

- 206—SPECIAL RECEPTACLES AND PACKAGES, subclass 57, Packages, Dispensing, Paper sheets, for toilet-paper-suspending devices in combination with the sheets of paper.
- 211—STORE FURNITURE, subclass 2, Bag and twine holders, Bag-holders, for temporary bag-holding devices analogous to this subclass.
155. **PIN-FASTENERS, LOSS-PREVENTING DEVICES.** A separate device having the function of preventing loss or theft of a pin. May be either independent of the pin or it may be incorporated in the body of the pin.
- Search Classes—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 97, Buttons and fasteners, Hinged-leaf, and the subclasses thereunder.
- 132—TOILET, subclass 25, Hat-fasteners, where the device is attached permanently to the hat or is peculiarly adapted for use as a hat-fastener, and subclass 22, Hair-fasteners, for analogous devices, but especially adapted for the purpose set forth.
156. **PIN-FASTENERS, GUARDS.** Devices for holding and protecting the pin-point.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 161, Pin-fasteners, Resilient.
157. **PIN-FASTENERS, GUARDS, PIVOTED.** The guard has a pivoted part which operates to lock the pin in place.
- Note.**—This subclass does not include devices in which the pin itself is pivoted, for which search in this class, subclass 160, Pin-fasteners, Pivoted.
158. **PIN-FASTENERS, GUARDS, SLIDING.** The locking is accomplished by means of a sliding movement of the guard. Where the pin itself has a sliding movement, the device is excluded and is classified in subclass 162, Pin-fasteners, Sliding.
159. **PIN-FASTENERS, GUARDS, WIRE.** The guard is of wire. Usually the whole pin, including the guard, is one piece of wire.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 161, Pin-fasteners, Resilient.
160. **PIN-FASTENERS, PIVOTED.** Pivoted pins in which the invention lies in features peculiar to pivoted pins, such as the joints, or the claims include both joint and guard.
161. **PIN-FASTENERS, RESILIENT.** Pins having resilient joints and those in which both the joint and guard are claimed.
- Note.**—Common safety-pin joints where there is no novelty in the joint have not been included in this subclass; but such patents will be in the subclass containing the novel matter. Ordinarily this novelty lies in the guard for the pin-point.
- Search Class—**
40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 24, Checks, labels, and tags, Fasteners, Pin-loop.
162. **PIN-FASTENERS, SLIDING.** Some part of the pin structure slides, usually for locking the pin. Contains also patents claiming both guard and sliding joint.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 158, Pin-fasteners, Guards, Sliding, for devices in which the pin-guard slides over the point to protect the same.
163. **BUCKLES.** Devices which are designed for the purpose of adjusting as well as holding straps, bands, and similar articles, excluding bale-ties, which are specially adapted for holding bales. Some forms of buckles are closely related to clasps in structure, but are always distinguished in having provision for the band passing through the structure, so that it may be pulled tight for the purpose of adjustment, a clasp being only suitable for gripping the end or edge of the material or band.
- Note.**—Devices which resemble buckles, but are more closely related to cord and rope holders in structure as well as use, are excluded from Buckles and are classified as Cord and rope holders. The more common use of these devices is as hitching-strap holders.
- Search Classes—**
165—DESIGNS, for all forms of buckles.
- 241—GARMENT-SUPPORTERS, subclass 8, Waist-line body-garment, Belts, for buckles specially adapted for waist-belts; also subclass 31, Waist-line body-garment, Shoulder-suspension, Waist-formers, for buckles specially adapted for forming the waist-front.
164. **BUCKLES, HARNESS.** Buckles peculiarly adapted for use in harness constructions or with leather straps.
- Search Class—**
54—HARNESS, subclasses 28, Hames, Fasteners, Strap; 50, Thill-tugs; 54, Trace-carriers; 55, Trace-carriers, Hook, for combined buckles and hooks, and 74, Rein-holds.
165. **BUCKLES, HARNESS, COMBINED BUCKLES AND SNAP-HOOKS.** A buckle and snap-hook are combined in the same structure, sometimes with a working connection between the buckle-tongue and the snap-hook closure.
- Search Class—**
54—HARNESS, subclasses 51, Thill-tugs, Open, and 55, Trace-carriers, Hooks.
166. **BUCKLES, HARNESS, LOCK.** Buckles in which an independent device is used to prevent the tongue of the buckle from disengaging.
167. **BUCKLES, HARNESS, LOCK, KEY.** The device which locks the tongue is operated by means of a key.

CLASS 24—Continued.

168. BUCKLES, HARNESS, CLAMPING. The strap is held by clamping solely, without any penetrating tongue or stud.
169. BUCKLES, HARNESS, CLAMPING, ONE-PIECE. A clamping-buckle made of a single integral part.
Search Class—
 24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 198, Buckles, One-piece; 199, Buckles, One-piece, Hook-attached, and 200, Buckles, One-piece, Looped-strap.
170. BUCKLES, HARNESS, CLAMPING, PIVOTED PART OR LEVER. The clamping is done by a jaw attached to a pivoted lever, usually hand-operated, but includes strap-tightened jaws.
Search Class—
 24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 191, Buckles, Pivoted-lever; 192, Buckles, Pivoted-lever, Hook-attached, and 193, Buckles, Pivoted-lever, Looped-strap.
171. BUCKLES, HARNESS, CLAMPING, SLIDING PART OR WEDGE. The gripping of the strap is accomplished by means of a sliding part, commonly a wedge or wedge-like in action.
Search Class—
 24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 25, Bale and package ties, Metal bands, Separate connections, Wedging parts, and 194, Buckles, Sliding part or wedge.
172. BUCKLES, HARNESS, CROSS-BAIIS. The principal feature of these buckles is the combination of two frames or bails, both of which form loops entirely inclosing the straps and so interlaced that a tension on the strap throws the bails into such a position as to more tightly grip the same. Studs or tongues are sometimes used in connection with the clamping action. This subclass contains those which depend entirely on the clamping action.
173. BUCKLES, HARNESS, CROSS-BAIIS, PIVOTED STUD-PLATE. A pivoted plate with a penetrating stud is attached to one of the frames to further assist in holding the straps.
174. BUCKLES, HARNESS, CROSS-BAIIS, RIGID-STUD. A stud is attached rigidly to one of the frames.
175. BUCKLES, HARNESS, PENETRATING - TONGUE, GUARDED. The tongue of the buckle is protected by some device, so as to prevent the point from engaging or catching.
176. BUCKLES, HARNESS, PENETRATING-TONGUE, ONE-PIECE. The frame and stud are in one integral piece.
Search Class—
 24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 186, Buckles, Penetrating-prong, One-piece, and 187, Buckles, Penetrating-prong, One-piece, Hook-attached.
177. BUCKLES, HARNESS, PENETRATING - TONGUE, MULTIPLE. Buckles in which there are two or more tongues or studs.
178. BUCKLES, HARNESS, PENETRATING-TONGUE, PIVOTED. The tongue is pivoted to the frame.
Search Class—
 24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 186, Buckles, Penetrating-prong, One-piece, and 187, Buckles, Penetrating-prong, One-piece, Hook-attached.
179. BUCKLES, HARNESS, PENETRATING-TONGUE, PIVOTED, LEVER-ACTUATED. A lever is attached to the pivoted tongue for withdrawing the tongue from engagement with the strap without first loosening the buckle.
180. BUCKLES, HARNESS, PENETRATING-TONGUE, PIVOTED, STUD. A pivoted stud is used instead of a tongue, the distinction being that a stud passes vertically through the strap and has no support on the frame, as is the case with a tongue-buckle.
181. BUCKLES, HARNESS, PENETRATING - TONGUE, SLIDING PART OR WEDGE. The gripping of the strap is accomplished by means of a sliding part, usually wedge-like, and there is a tongue or stud to further assist in holding the strap.
Search Class—
 24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 195, Buckles, Sliding part or wedge, Hook-attached.
182. BUCKLES, HARNESS, STRAP-LOOPS AND ATTACHING DEVICES. Devices for holding the strap end after buckling and means for attaching the same to a fabric, otherwise called "billet-loops."
Search Classes—
 24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 163, Buckles.
 54—HARNESSES, subclasses 28, Harnes, Fasteners, Strap, and 32, Harnes-tugs.
183. BUCKLES, HARNESS, LOOP-SHIELDS. Devices attached to buckles for preventing wear on the strap, being so designed that the attaching device engages with the metal of the buckle and not on the strap.
Search Class—
 54—HARNESSES, subclass 28, Harnes, Fasteners, Strap.
184. BUCKLES, GARMENT-SHIELDED. Buckles which are so constructed that no metal part of the buckle will come in contact with the garment underneath.

CLASS 24—Continued.

185. BUCKLES, COMBINED PRESSURE-BAR AND GUARD, HOOK-ATTACHED. Buckles in which a pressure-bar clamps the band and has at the same time a projection which guards the hook, usually used as a suspender-buckle.
186. BUCKLES, PENETRATING-PRONG, ONE-PIECE. A one-piece buckle in which prongs are the means of holding the strap or band.
Search Class—
 24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 176, Buckles, Harness, Penetrating-tongue, One-piece.
187. BUCKLES, PENETRATING-PRONG, ONE-PIECE, HOOK-ATTACHED. The title is self-explanatory, in view of the definition for subclass 186, Buckles, Penetrating-prong, One-piece.
188. BUCKLES, PENETRATING-PRONG, PIVOTED. The buckle-frame and the prongs are pivoted together.
Search Class—
 24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 178, Buckles, Harness, Penetrating-tongue, Pivoted.
189. BUCKLES, PENETRATING-PRONG, PIVOTED, HOOK-ATTACHED. Same as subclass 188, Buckles, Penetrating-prong, Pivoted, but has a suspending-hook attached.
190. BUCKLES, PENETRATING-PRONG, SLIDE. The frame and the prong part are adapted to slide on each other to cause engagement.
191. BUCKLES, PIVOTED-LEVER. A lever pivoted to the buckle-frame serves as the clamping means. It may be either hand-operated or it may have the band attached to it. The gripping-jaws may be toothed or smooth.
Search Class—
 24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 78, Fasteners combined, Buckle separable, Pivoted-lever buckle, and 170, Buckles, Harness, Clamping, Pivoted part or lever.
192. BUCKLES, PIVOTED-LEVER, HOOK-ATTACHED. Same as subclass 191, Buckles, Pivoted-lever, but have suspending hooks.
193. BUCKLES, PIVOTED-LEVER, LOOPED-STRAP. A pivoted-lever buckle in which a looped-strap-clamping device is used.
194. BUCKLES, SLIDING PART OR WEDGE. These buckles have a sliding part which serves to clamp the fabric either wedge-like or by pressing a toothed jaw into the same. Includes devices in which a separate part engages the two jaws and is moved back and forth to operate the same.
Search Class—
 24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 171, Buckles, Harness, Clamping, Sliding part or wedge, and 181, Buckles, Harness, Penetrating-tongue, Sliding part or wedge.
195. BUCKLES, SLIDING PART OR WEDGE, HOOK-ATTACHED. Buckles, sliding part or wedge, with a suspending-hook attached.
196. BUCKLES, SLIDING PART OR WEDGE, LOOPED-STRAP. A sliding part passes through a looped strap and is drawn down to clamp the fabric.
197. BUCKLES, LOOPED-STRAP. The clamping of the strap or band is accomplished by means of looping or doubling the band on itself, the two portions of the band being pressed into contact in such a manner as to grip and hold.
Search Class—
 24—BUCKLES, BUTTONS, CLASPS, ETC., the subclasses of "Looped strap" under other subclasses of Buckles.
198. BUCKLES, ONE-PIECE. The buckle is composed of one piece of metal.
Search Class—
 24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 169, Buckles, Harness, Clamping, One-piece; 176, Buckles, Harness, Penetrating-tongue, One-piece, and 186, Buckles, Penetrating-prong, One-piece.
199. BUCKLES, ONE-PIECE, HOOK-ATTACHED. A supporting-hook is an integral part of the buckle.
200. BUCKLES, ONE-PIECE, LOOPED-STRAP. The band is held by means of looping or doubling the band.
201. SEPARABLE FASTENERS. This title provides for all two-part fastenings—that is, where one part engages with another part for the purpose of connecting two parts of a garment or other articles. Hooks and eyes and head-and-socket fasteners are familiar examples of this type of fastening. This subclass also includes button-loops adapted to be used in connection with a common sewed-on button, except where the button and loop are in one structure and the fabric is gripped between the button and loop.
Search Classes—
 24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 245, Clasps, Button and loop, and the subclasses thereunder, where the button and loop are in one structure and the fabric is gripped between the button and loop; subclasses 104, Buttons and fasteners, Separable, and 110, Buttons and fasteners, Separable, Spring, With operating devices.
 16—BUILDERS' HARDWARE, subclasses 76, Casters, Pintle-retainers, and 78, Door-checks, Catches, Wall.

CLASS 24—Continued.

- 54—HARNESSES, subclass 21, Collars, Fasteners.
- 59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 96, Key-holders.
- 63—JEWELRY, subclasses of Bracelets, where a separable fastener is claimed in combination with some detail construction of a bracelet; but where the separable fastening is an independent element it is classified in this class under the title of Separable fasteners.
- 70—LOCKS AND LATCHES, subclass 116, Bag-fasteners.
202. SEPARABLE FASTENERS, BUTTONHOLE-PROTECTORS. Devices adapted for protecting either the entire edge of a buttonhole or the end on which the strain comes; also includes devices for surrounding a fabric buttonhole to prevent the same from tearing out.
- Search Class—**
36—BOOTS, SHOES, AND LEGGINGS, subclass 52, Buttonhole-pieces.
203. SEPARABLE FASTENERS, MULTIPLE. Devices in which there is more or less invention in the arrangement or combination of two or more simple separable fasteners.
204. SEPARABLE FASTENERS, MULTIPLE, INTEGRALLY-CONNECTED. Includes those fasteners in which two or more engaging or engageable members are integrally connected.
205. SEPARABLE FASTENERS, MULTIPLE-OPERATED. A series of fastenings are operated either simultaneously or consecutively by some independent operating means.
206. SEPARABLE FASTENERS, STEP-ADJUSTING. Means are provided for adjusting the separable members at fixed intervals.
- Search Classes—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 123, Cord and rope holders, Couplings and sockets.
54—HARNESSES, subclass 33, Hame-tugs, Adjustable.
70—LOCKS AND LATCHES, subclass 116, Bag-fasteners.
241—GARMENT-SUPPORTERS, subclass 26, Waist-line body-garment, Shoulder-suspension, Step-adjusting.
207. SEPARABLE FASTENERS, RUNWAY-ENGAGING. Guides or runways are attached to the two parts which are to be brought together. In these runways a part so operates that a sliding movement in one direction draws the parts together, while the reverse movement permits them to open out.
208. SEPARABLE FASTENERS, HEAD-AND-SOCKET, AXIAL CLOSURES. In this type the parts engage in an axial direction as distinguished from a lateral or side movement.
209. SEPARABLE FASTENERS, HEAD-AND-SOCKET, AXIAL CLOSURES, LINK-BUTTON. A link is attached to the stud members and is so constructed that both link and stud may be passed through the eyelet axially, after which the link is turned down and slid along so as to form a sort of button, which prevents disengagement.
210. SEPARABLE FASTENERS, HEAD-AND-SOCKET, AXIAL CLOSURES, HINGED CAP-PLATE. These devices consist essentially of a stud, an eyelet through which the stud passes, and a hinged plate which swings over the stud to prevent disengagement between the eyelet and the stud.
211. SEPARABLE FASTENERS, HEAD-AND-SOCKET, AXIAL CLOSURES, PIVOTED OR SLIDING LOCK. In these fastenings the locking of the parts is attained by means of plates, either pivoted or slidable. These plates may be either in the head or the socket part of the device.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 59, Necktie-fasteners, Button-engaging, Pivoted or sliding jaw; 104, Buttons and fasteners, Separable; 107, Buttons and fasteners, Separable, Spring, Resilient-head; 108, Buttons and fasteners, Separable, Spring, Resilient-socket; 110, Buttons and fasteners, Separable, Spring, With operating devices, and 205, Separable fasteners, Multiple-operated.
212. SEPARABLE FASTENERS, HEAD-AND-SOCKET, AXIAL CLOSURES, PIVOTED-HEAD. The head of the stud is pivoted and can thus be turned into an axial position while being passed through the eyelet, after which the head is placed in a lateral position to prevent disengagement.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 97, Buttons and fasteners, Hinged-leaf, and 99, Buttons and fasteners, Hinged-leaf, Double.
213. SEPARABLE FASTENERS, HEAD-AND-SOCKET, AXIAL CLOSURES, RESILIENT-HEAD. Axial closure head and socket fasteners having a resilient head.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 107, Buttons and fasteners, Separable, Spring, Resilient-head, and 214, Separable fasteners, Head-and-socket, Axial closures, Resilient-head, Rigid-socket.
214. SEPARABLE FASTENERS, HEAD-AND-SOCKET, AXIAL CLOSURES, RESILIENT-HEAD, RIGID-SOCKET. The head or stud is made resilient and the socket is rigid, both fastenings being claimed.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 107, Buttons and fasteners, Separable, Spring, Resilient-head.

CLASS 24—Continued.

215. SEPARABLE FASTENERS, HEAD-AND-SOCKET, AXIAL CLOSURES, RESILIENT-HEAD, WIRE. The resilient part is of wire and is in the stud or head.
216. SEPARABLE FASTENERS, HEAD-AND-SOCKET, AXIAL CLOSURES, RESILIENT-SOCKET. The resilient socket only is the subject of the invention.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 108, Buttons and fasteners, Separable, Spring, Resilient-socket, and 217, Separable fasteners, Head-and-socket, Axial closures, Resilient-socket, Rigid-head.
217. SEPARABLE FASTENERS, HEAD-AND-SOCKET, AXIAL CLOSURES, RESILIENT-SOCKET, RIGID-HEAD. The socket member is resilient and the stud member is rigid, both parts being claimed.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 108, Buttons and fasteners, Separable, Spring, Resilient-socket.
218. SEPARABLE FASTENERS, HEAD-AND-SOCKET, AXIAL CLOSURES, RESILIENT-SOCKET, WIRE. The resilient part is of wire and is in the socket member.
219. SEPARABLE FASTENERS, HEAD-AND-SOCKET, AXIAL CLOSURES, RIGID-HEAD. Rigid studs or buttons for use with resilient sockets where only the stud member is claimed.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 108, Buttons and fasteners, Separable, Spring, Resilient-socket, and 217, Separable fasteners, Head-and-socket, Axial closures, Resilient-socket, Rigid-head.
220. SEPARABLE FASTENERS, HEAD-AND-SOCKET, AXIAL CLOSURES, RIGID-SOCKET. Rigid sockets for use with resilient heads where only the socket member is claimed.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 107, Buttons and fasteners, Separable, Spring, Resilient-head, and 214, Separable fasteners, Head-and-socket, Axial closures, Resilient-head, Rigid-socket.
221. SEPARABLE FASTENERS, HEAD-AND-SOCKET, AXIAL CLOSURES, ROTATING-HEAD. The head is elongated and must register with an eyelet of similar shape before engagement or disengagement can be effected, which is done by rotating or turning the head.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 109, Buttons and fasteners, Separable, Spring, Rotating-head.
222. SEPARABLE FASTENERS, HEAD-AND-SOCKET, LATERAL CLOSURES. This type of fastener requires a lateral or side movement in operating the device, an example of which is the ordinary corset-fastening.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 56, Necktie-fasteners, Button-engaging, and 104, Buttons and fasteners, Separable.
223. SEPARABLE FASTENERS, HEAD-AND-SOCKET, AXIAL CLOSURES, AUXILIARY LOCKING DEVICES. Fasteners of the lateral-closing type in which there is an independent device whose purpose is to lock the members into engagement.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 110, Buttons and fasteners, Separable, Spring, With operating devices; 211, Separable fasteners, Head-and-socket, Axial closures, Pivoted or sliding lock, and 224, Separable fasteners, Head-and-socket, Lateral closures, Resilient.
224. SEPARABLE FASTENERS, HEAD-AND-SOCKET, LATERAL CLOSURES, RESILIENT. A spring device prevents disengagement of the members.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 106, Buttons and fasteners, Separable, Spring, and 110, Buttons and fasteners, Separable, Spring, With operating devices.
225. SEPARABLE FASTENERS, HOOK-AND-EYE. One member is a hook and the other member is an eye, as indicated in the title. Includes hooks which engage a cloth buttonhole or loop—for example, hooks attached to the trousers and engaging the cloth loops attached to the undergarments.
226. SEPARABLE FASTENERS, HOOK-AND-EYE, SHEET-METAL. The members are composed of sheet metal.
227. SEPARABLE FASTENERS, HOOK-AND-EYE, SHEET-METAL, METALLIC ATTACHMENT. The members have metallic fastening means, usually prongs, which are passed through the material and bent down.
228. SEPARABLE FASTENERS, HOOK-AND-EYE, WIRE. The members are made of wire.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 27, Bale and package ties, Wire.
229. SEPARABLE FASTENERS, HOOK-AND-EYE, WIRE, METALLIC ATTACHMENT. The members are attached to the material by metallic means as distinguished from those which are sewed on by thread.

CLASS 24—Continued.

Search Class—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 88, Fasteners combined, Pin-pin, Separably connected.

230. SEPARABLE FASTENERS, LATERAL-SLIDING. All separable fastenings in which the members engage laterally and are not classifiable as head-and-socket fastenings.

Search Class—

70—LOCKS AND LATCHES, subclasses 82, Box-fasteners, Spring-catch, and 87, Knob attachments, Spring-fastener.

231. SNAP-HOOKS. All devices for closing or locking the parts of a hook, so as to prevent disengagement. So-called "watch-chain swivels" are included where the invention is in the hook-closure. Hoisting-hooks where no closure is shown and hooks for releasing or dropping a load are excluded.

Search Classes—

21—CARRIAGES AND WAGONS, subclasses 27, Holdbacks; 79, Whiffletree-hooks, and 92, Pole-tips.

40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 9, Checks, labels, and tags, Hat.

54—HARNESSES, subclasses 46, Saddles, Riding, Attachments, and 62, Check-hooks, Movable-keeper.

57—HOISTING, subclasses 127, Hoisting-hooks, and 128, Hoisting-hooks, Releasing, for hoisting-hooks where no closure is shown, and hooks for releasing or dropping a load.

59—CHAIN, STAPLE, AND HORSESHOE MAKING, appropriate subclasses under Chains, Links, Detachable.

165—DESIGNS, for snap-hooks.

232. SNAP-HOOKS, PIVOTED. Hooks which are closed by some part moving on a pivot.

Search Classes—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 185, Buckles, Combined pressure-bar and guard, Hook-attached, for pivoted snap-hooks.

59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclasses 88, Chains, Links, Detachable, Double lap, Pivoted, and 89, Chains, Links, Detachable, Pivoted Closure.

233. SNAP-HOOKS, PIVOTED, SPRING. Pivoted closures held in place by springs.

234. SNAP-HOOKS, PIVOTED, SPRING, COIL. Pivoted closures held in place by means of coil-springs.

235. SNAP-HOOKS, PIVOTED, SPRING, COIL, AXIAL. Pivoted closures held in place by means of coil-springs wound about the pivot as an axis.

236. SNAP-HOOKS, RESILIENT. A spring of some kind is the closing means.

Search Class—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 193, Buckles, Pivoted-lever, Hook-attached.

237. SNAP-HOOKS, RESILIENT, ONE-PIECE. The hook and closure are of one piece and form a spring-tongue closure.

Search Class—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 231, Snap-hooks, and 225, Separable fasteners, Hook-and-eye, and the subclasses thereunder for one-piece hooks not resilient.

238. SNAP-HOOKS, SLIDING. The closure has a sliding movement.

239. SNAP-HOOKS, SLIDING, SPRING. The closure has a sliding movement and is kept in place by means of a spring.

240. SNAP-HOOKS, WATCH CHAIN ATTACHING. Snap-hooks specially adapted for attaching a watch to a chain and sometimes include the swiveling device.

Search Class—

59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 95, Chains, Swivels, for swivels *per se*.

241. SNAP-HOOKS, LOCKING DEVICES. All closures in which some special part or provision is found for positively locking the closure, but excludes those patents in which the closure itself without any additional feature locks the hooks.

242. SNAP-HOOKS, LOCKING DEVICES, TENSION-OPERATED. The locking is caused by the action of the article carried or by the pull of the connecting-strap. In the first case the article must be lifted to open the hook, and in the second case the strap must be loosened for the same purpose.

243. CLASPS. Devices of general utility in which the following characteristics appear: suitably-connected gripping-jaws having the function of temporarily engaging over an edge of material or over the article, but which do not permit the material to be drawn through in such a way as to become a strap or web adjustment.

Note.—Adjusting devices are classified under Buckles.

Note.—Clasps which are of special art utility are classified in the appropriate art classes and are excluded from this class.

Note.—There are a number of patents classified as clasps (particularly resilient clasps) which are very similar to some of the patents found in class 129, PAPER FILES AND BINDERS, subclass 35, Clamping, and the subclasses thereunder; but the general principle is that where the device is specially adapted for use as a temporary binder it is classified in class 129, PAPER FILES AND BINDERS, while devices more closely related to clasps for general purposes are found in this class.

CLASS 24—Continued.

Search Classes—

5—BEDS, subclass 22, Clothes-clamps.

11—BOOKBINDING, subclass 12, Book leaf-holders and marks.

165—DESIGNS, for clasps.

244. CLASPS, BALL OR ROLL. A ball or roll suitably incased tends to grip the material to be held between the ball and casing. Usually the ball acts as a wedge.

Search Class—

16—BUILDERS' HARDWARE, subclass 19, Sash-holders.

245. CLASPS, BUTTON-AND-LOOP. This form of clasp is composed of a stud or button over which the material to be held is placed and a loop which engages the button-shank in such a way that the material is prevented from slipping. Where a button engages the loop member directly, the button being attached to the article which is to be held, the device is classed as a separable fastener under the appropriate subclass.

246. CLASPS, BUTTON-AND-LOOP, PIVOTED OR RESILIENT ARMS. In this case the engaging loop is either pivoted to the button-frame or is in the form of a spring-arm.

247. CLASPS, BUTTON-AND-LOOP, SLIDE. The loop portion has a sliding motion on the button-frame to permit of engaging and disengaging the clasp.

248. CLASPS, PIVOTED. Clasps in which the jaws are pivoted

249. CLASPS, PIVOTED, BROOM OR HANDLE. Clasps adapted specially to grip a handle, such as a broom or similar article.

Search Classes—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 254, Clasps, Pivoted, Spring, Broom or handle, and 257, Clasps, Resilient, Broom or handle, for other broom or handle grips.

15—BRUSHING AND SCRUBBING, subclass 6, Brush and broom supports, for broom-holders which are more than a mere clasp for the handle or are a part of a broom or where the broom rests on some support.

16—BUILDERS' HARDWARE, subclass 118, Sash-fasteners, Rod-clamps.

21—CARRIAGES AND WAGONS, subclasses 129, Whip-sockets, and 131, Whip-sockets and rein-holders combined.

65—KITCHEN AND TABLE ARTICLES, subclass 62, Dust-pans, Brush attachments.

250. CLASPS, PIVOTED, SEPARATE LOCK-LEVER. The pivoted jaws are provided with a separate part or lever which may be operated to lock the jaws into their gripping contact. Note.—Where the jaw itself is the lever, it is excluded from this subclass and will be found under subclass 248, Clasps, Pivoted. Where the separate locking device is a sliding part, search in this class, subclass 251, Clasps, Pivoted, Sliding-lock.

Search Class—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 258, Clasps, Resilient, Separate lock-lever.

251. CLASPS, PIVOTED, SLIDING-LOCK. The pivoted jaws are provided with a sliding part which locks the jaws in their operative position.

Search Class—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 260, Clasps, Resilient, Sliding-lock.

252. CLASPS, PIVOTED, SPRING. The pivoted jaws are held together by a spring.

253. CLASPS, PIVOTED, SPRING, AXIAL-COIL. The spring is a coil about the pivoted axis.

254. CLASPS, PIVOTED, SPRING, BROOM OR HANDLE. The clasp is shaped to hold broom-handles and like articles.

Search Classes—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 249, Clasps, Pivoted, Broom or handle, and 257, Clasps, Resilient, Broom or handle.

15—BRUSHING AND SCRUBBING, subclass 6, Brush and broom supports, for broom-holders which are more than a mere clasp for the handle or are a part of a broom or where the broom rests on some support.

16—BUILDERS' HARDWARE, subclass 118, Sash-fasteners, Rod-clamps.

21—CARRIAGES AND WAGONS, subclasses 129, Whip-sockets, and 131, Whip-sockets and rein-holders combined.

65—KITCHEN AND TABLE ARTICLES, subclass 62, Dust-pans, Brush attachments.

255. CLASPS, RESILIENT. The jaws are so connected as to form spring-arms and depend upon the spring of the material to open or close the jaws.

Search Classes—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 121, Cord and rope holders, Lacing-terminals, Resilient-clip.

21—CARRIAGES AND WAGONS, subclasses 131, Whip-sockets and rein-holders combined; 132, Rein-holders, Clamp, and 133, Rein-holders, Spring.

40—CARD, PICTURE, AND SIGN EXHIBITING, subclasses 10, Checks, labels, and tags, Holders, and 11, Checks, labels, and tags, Holders, Clip, for spring-clips adapted for holding a check or used commonly on car-seats and which includes devices for that purpose attached to the person.

CLASS 24—Continued.

256. CLASPS, RESILIENT, CIRCULAR. The clasp is circular in shape and is sprung over the article to be gripped. More commonly used as trouser-guards or armlets.

Search Class—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 72, Trouser guards and straps.

257. CLASPS, RESILIENT, BROOM OR HANDLE. Adapted to grip handles or rods.

Search Classes—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 249, Clasps, Pivoted, Broom or handle, and 254, Clasps, Pivoted, Spring, Broom or handle.

15—BRUSHING AND SCRUBBING, subclass 6, Brush and broom supports, for broom-holders which are more than a mere clasp for the handle or are a part of a broom or where the broom rests on some support.

16—BUILDERS' HARDWARE, subclass 118, Sash-fasteners, Rod-clamps.

21—CARRIAGES AND WAGONS, subclasses 129, Whip-sockets, and 131, Whip-sockets and rein-holders combined.

65—KITCHEN AND TABLE ARTICLES, subclass 62, Dust-pans, Brush attachments.

258. CLASPS, RESILIENT, SEPARATE-LOCK-LEVER. A separate lever locks the jaws together.

Search Class—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 250, Clasps, Pivoted, Separate lock-lever, and 260, Clasps, Resilient, Sliding-lock, where the separate locking device slides.

259. CLASPS, RESILIENT, SHEET-METAL. Resilient clasps constructed of sheet metal; but where a sheet-metal clasp contains operating means as specified in the other subclasses it is classified in that subclass to which it relates.

260. CLASPS, RESILIENT, SLIDING-LOCK. A sliding part locks the jaws together.

261. CLASPS, RESILIENT, WIRE. Clasps made entirely of wire.

Note.—Wire clasps where the operating means is the principal feature will be found occasionally in the clasp subclasses.

Search Class—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 122, Cord and rope holders, Lacing-terminals, Wire; 139, Clothes-pins, Wire; 260, Clasps, Resilient, Sliding-lock, and 264, Clasps, Wedge-slot.

CLASS 24—Continued.

262. CLASPS, PROTECTED JAWS. A clasp having the jaws provided with tips, usually for preventing damage to the material gripped.

263. CLASPS, SLIDING-JAW. The jaws are so connected that one jaw may slide on the other to grip the material.

264. CLASPS, WEDGE-SLOT. A V-shaped or wedge slot grips the material by tending to force the same into a more contracted portion of the slot.

Search Class—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 130, Cord and rope holders, One-piece, Wedge-slot.

265. STRAP-END-ATTACHING DEVICES. Devices for attaching the strap or band to buckles, clasps, snap-hooks, and like articles, including permanent attaching means, and also those temporary attachments which are not properly buckles or any other recognized form of fastening.

266. DRAW-STRINGS. Devices in which a strap or a string is drawn through an eyelet or equivalent opening and is then doubled over and pulled up, so that some form of fastening device may hold the same in that position. These devices are used commonly on gloves, shoes, and leggings.

267. PIVOTED EDGE STAYS. Devices which consist of two parts or jaws pivoted at one end and having some means for locking the jaws when in a closed position. They are commonly used on gloves, shoes, and dress-plackets and take the place of other fastenings.

Search Class—

2—APPAREL, subclass 132, Nether garments, Placket-closures.

268. RESILIENT CONNECTIONS. Devices in which a resilient connecting part is in combination with buttons, buckles, clasps, etc.

Search Classes—

54—HARNESSES, subclasses 48, Stirrups, Elastic, and 86, Elastic connections.

74—MACHINE ELEMENTS, subclass 72, Elastic tension devices, and the subclasses thereunder for resilient connections *per se*.

241—GARMENT SUPPORTERS, subclasses 5, Limb encircling, and 21, Waist-line body garment, Shoulder suspension, Connections, Resilient.

CLASS 25.—PLASTIC-BLOCK AND EARTHENWARE APPARATUS.

DEFINITIONS.

Class.

This class includes apparatus for making blocks of plastic material and apparatus for making articles of earthenware, such as pipe, pottery, door-knobs, electrical fixtures, etc. The term "plastic block" as here used includes blocks made of substances which when pressed in a pulverulent condition or expressed through a die in a moistened and tempered condition have sufficient cohesive power to retain the shape given them or which when placed in a mold in a semiliquid or viscous condition at ordinary temperature will set so as to retain the shape given by the mold.

This class does not include apparatus which may be used in this art, but which has a well-defined status in the other arts, such as driers, trucks, grapples, conveyers, loading and unloading apparatus, and devices for pugging, mixing, tempering, or grinding, these latter devices being classified in class 83, MILLS; nor does it include presses for butter, dough, pills, or confectionery.

Under the subclasses of "Fluid-operated" are included combinations of fluid-operated motors with the machine, where the improvement may be in the combination or partly in the motor and partly in the machine, also motors especially organized to operate machines belonging in this class only. Improvements solely in motors of general utility are classified with the appropriate motor classes.

This class also includes purely manipulative processes for the formation of objects from clay or other natural plastic or from moistened lime or cement, with or without the addition of inert solids. When, however, inert solids are so incorporated as to constitute a facing or when the intermixing of ingredients not included above is also made material by the language of the claims, the patent is made original in class 18, PLASTICS, even though the claims involve a special manipulation of interest in this class. The term "natural plastic" is used herein to designate any mineral occurring in nature which forms a stone-like product if merely ground, moistened, and burned, as clay or slate.

Subclasses.

1. MISCELLANEOUS. Apparatus for use in the manufacture of plastic blocks and earthenware not otherwise classified. Includes such tools for use in the manufacture of bricks and pottery as are not adapted for use in other arts.

2. BRICK-MAKING PLANTS. Apparatus for manufacturing bricks or similar blocks, consisting of a combination of machines, at least one of them belonging in this class, and others which, if considered by themselves, would be classified in another art.

Search Classes—

- 18—PLASTICS, subclass 4, Molding plants.
- 22—METAL-FOUNDING, subclasses 20, Molding apparatus, Plants; 64, Casting apparatus, Plants; 139, Molds, Metal, Ingots and pigs, and subclasses thereunder.

3. ELECTRICAL-FIXTURE MACHINES. Apparatus for making electrical insulators, switch-covers, etc., of earthenware or similar plastic material. Does not include apparatus for making electric-light carbons and filaments.

Note.—Machines which make insulating-tubes of plastic material are classified under "Pipe-machines" and its subclasses in this class.

Search Class—

- 49—GLASS, for making electrical fixtures of glass.

4. KNOB-MACHINES. Machines for making knobs, such as door-knobs and drawer-knobs, of earthenware or similar plastic material.

5. PLAYING-MARBLE MACHINES. Apparatus for making playing-marbles from clay or similar material.

Search Class—

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 11, Rolling, Pills.

6. TOBACCO-PIPE MACHINES. Apparatus for making tobacco-pipes from clay or similar material.

7. SOAP-MOLDING DEVICES. Miscellaneous devices for molding cakes of soap.

8. SOAP-MOLDING DEVICES, DIE-EXPRESSING. Molding devices in which the soap material is expressed through a die.

9. SOAP-MOLDING DEVICES, ROTARY MOLD. Machines in which soap is pressed in a series of molds which are rotated so as to bring each mold successively into position for charging and pressing.

10. SOAP-MOLDING DEVICES, STATIONARY MOLD. Machines in which soap is pressed in stationary molds by movable plungers.

11. DIE-EXPRESSING. Miscellaneous machines in which the article to be formed is expressed through a die in order to give it the required shape.

CLASS 25—Continued.

Search Class—

- 207—PLASTIC-METAL WORKING, subclass 2, *et seq.*, Die expressing.

12. DIE-EXPRESSING, DETACHED BLOCK. Machines in which the material is expressed through a die in the form of detached blocks or blocks which are readily separated from each other instead of a continuous length which requires cutting. Sometimes separating-plates are inserted between successive charges to separate the blocks and are forced out of the die or open-end mold with the material.

13. DIE-EXPRESSING, POTTERY. Machines which form earthenware receptacles by expressing the material through a die.

14. DIE-EXPRESSING, SCREW-EJECTOR. Machines in which the material is expressed through a die by means of a forcing-screw.

Search Class—

- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS; subclass 48, Block-presses, Portable mold, Supported in race; 17, BUTCHERING, subclasses 6, Sausage-machines; 20, Meat-cutters, Cylinder and concave, and 21, Meat-cutters, Double-cylinder.

15. DIE-EXPRESSING, PLUNGER-EJECTOR. Machines in which the material is expressed through a die by means of a plunger.

Search Class—

- 17—BUTCHERING, subclass 6, Sausage-machines.

16. DIE-EXPRESSING, PLUNGER-EJECTOR, FLUID-OPERATED. Those in which the plunger is operated by means of a fluid, such as water, steam, or compressed air.

Search Class—

- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 23, Pottery-machines, Fluid-operated; 31, Pipe-machines, Fluid-operated; 55, Block-presses, Reciprocating mold, Fluid-operated; 63, Block-presses, Rotary mold, Fluid-operated; 84, Block-presses, Stationary mold, Single-surface plunger, Fluid-operated, and 91, Block-presses, Stationary mold, Opposed plunger, Fluid-operated.

17. DIE-EXPRESSING, DIES. Improvements in dies which are used with this type of machine and not classified in the following three subclasses.

Search Class—

- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 39, Pipe-machines, Socket-formers, for dies which form sockets on pipe.

18. DIE-EXPRESSING, DIES, LIQUID-LUBRICATED. Expressing dies in which provision is made for lubricating by means of a liquid, such as oil or water.

19. DIE-EXPRESSING, DIES, STEAM-LUBRICATED. Expressing dies in which provision is made for lubricating by means of steam.

20. DIE-EXPRESSING, DIES, PERFORATING AND ORNAMENTS. Expressing dies which have an additional movable part which perforates or ornaments the article expressed.

21. ROLLER-FORMING. Machines in which the material is pressed into shape by the action of rollers.

Search Classes—

- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 11, Die expressing, for machines in which the material is pressed out of a die by rollers; also subclass 41, Block-molding machines.

80—METAL ROLLING.

207—PLASTIC-METAL WORKING.

22. POTTERY-MACHINES. Machines for making earthenware receptacles not included in the other subclasses.

Note.—Machines which form pottery by expressing it through a die are classified in subclass 13, Die-expressing, Pottery, in this class.

Search Classes—

- 49, GLASS, subclasses 8, Combined machines, Pressing and blowing; 35, Molding, Presses; 72, Molds, Pressing, and subclasses under each of these.

- 92—PAPER-MAKING AND FIBER LIBERATION, subclasses 58, Pulp molding, Centrifugal action; 59, Pulp molding, Compressors; 66, Pulp molding, Winding; and 67, Pulp molding, Winders, Sheet and board forming.

23. POTTERY-MACHINES, FLUID-OPERATED. Pottery-machines which are operated by means of a fluid.

Search Class—

- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 16, Die-expressing, Plunger-ejector, Fluid-operated; 31, Pipe-machines, Fluid-operated; 55, Block-presses, Reciprocating

CLASS 25—Continued.

- mold, Fluid-operated; 63, Block-presses, Rotary mold, Fluid-operated; 84, Block-presses, Stationary mold, Single-surface plunger, Fluid-operated, and 91, Block-presses, Stationary mold, Opposed plunger, Fluid-operated.
24. **POTTERY-MACHINES, JIGGERS.** Machines for forming receptacles, having a rotating mold in which the material is placed and shaped by a former which is brought down into the mold. Usually the interior of the mold is of the same shape as the exterior of the object to be molded; but in a modified form for molding shallow receptacles, such as plates and saucers, the surface of the mold is of the shape of the interior of the article.
- Search Class—**
25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 129, Molds, Pottery, for molds for use in jiggers.
25. **POTTERY-MACHINES, JIGGERS, IRREGULAR FORM.** Jiggers which form receptacles of elliptical or other irregular shape.
26. **POTTERY-MACHINES, JIGGERS, ROTARY FORMER.** Jiggers in which the former or core instead of the mold rotates.
27. **POTTERY-MACHINES, PRESSES.** Pottery-machines which form the article by direct pressure in a mold.
28. **POTTERY-MACHINES, PRESSES, BOTTOM EJECTORS.** Presses in which the article after it is formed in the mold is ejected by the movable bottom of the mold.
- Search Class—**
25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 26, Pottery-machines, Jiggers, Rotary former.
29. **POTTERY-MACHINES, CASTING.** Machines for casting receptacles from slip. The slip is poured into a porous mold, which absorbs the water and leaves a deposit of the material on the interior. When this deposit is sufficiently thick, the remaining slip is removed in some manner, as by inverting the mold and pouring it out or drawing it out by a pump or other appliance.
30. **PIPE-MACHINES.** Miscellaneous machines for forming earthenware pipe, such as drain-tile, sewer-pipe, electrical conduits, and insulating-tubes.
- Note.**—Machines which express the pipe from a die are classified in "Die-expressing" and its subclasses in this class.
- Search Classes—**
22—METAL FOUNDDING, subclasses 16, Molding apparatus, Pipes vertical, and subclasses thereunder; 98, Flasks, Vertical pipe; 140, Molds, Metal, Ingots and pigs, Hollow; and 166, Cores, Pipe.
49—GLASS, especially subclasses 30, Molding, Curved pipes and tubes, and 31, Molding, Vertical pipes and tubes.
92—PAPER-MAKING AND FIBER LIBERATION, subclasses 58, Pulp-molding, Centrifugal; 59, Pulp-molding, Compressors; 66, Pulp-molding, Winders, and 67, Pulp molding, Winders, Sheet and board forming.
31. **PIPE-MACHINES, FLUID-OPERATED.** Pipe-machines operated by means of a fluid.
- Search Class—**
25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 16, Die-expressing, Plunger-ejector, Fluid-operated; 23, Pottery-machines, Fluid-operated; 55, Block-presses, Reciprocating mold, Fluid-operated; 63, Block-presses, Rotary mold, Fluid-operated; 84, Block-presses, Stationary mold, Single-surface plunger, Fluid-operated, and 91, Block-presses, Stationary mold, Opposed plunger, Fluid-operated.
32. **PIPE-MACHINES, IN SITU.** Pipe-machines which form the pipe in the place where it is to remain.
- Note.**—Machines which excavate the ditch in addition to forming the pipe are classified on the excavating feature and will be cross-referenced only into this class. This does not include machines which lay the pipe after it is already formed.
33. **PIPE-MACHINES, MULTITUBULAR.** Pipe-machines which form pipe having a plurality of longitudinal passages, such as electrical conduits and twyers.
34. **PIPE-MACHINES, MULTITUBULAR, PERFORATORS.** Pipe-machines in which the plurality of passages are formed by rods or mandrels which are forced through the material.
- Search Class—**
25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 35, Pipe-machines, Perforating-former.
35. **PIPE-MACHINES, PERFORATING - FORMER.** Pipe-machines in which a mandrel or former is forced through the material to form a single passage.
- Search Class—**
25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 6, Tobacco-pipe machines, and 34, Pipe-machines, Multitubular, Perforators.
36. **PIPE-MACHINES, COMPACTING - FORMER.** Pipe-machines in which the mandrel or former has a screw or wing on its surface to compact the material as the mandrel is moved through from one end to the other.
37. **PIPE-MACHINES, TAMPER.** Pipe-machines which form pipe by a tamping action. Usually there are a series of rods which tamp the material as it is added gradually.
38. **PIPE-MACHINES, PLASTIC LINING AND COATING.** Pipe-machines which line or coat pipe with plastic material. Does not include machines which coat the pipe by a painting or dipping operation.

CLASS 25—Continued.

39. **PIPE-MACHINES, SOCKET-FORMERS.** Pipe-machines which form the socket or bell-shaped end of the pipe.
40. **PIPE-MACHINES, TURNERS.** Devices for turning or reversing the pipe after it is formed in the machine.
- Search Class—**
25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 113, Cutters, Tables.
41. **BLOCK-MOLDING MACHINES.** Miscellaneous machines for forming blocks or slabs of plastic material.
- Search Class—**
22—METAL FOUNDDING, subclass 9, Molding apparatus, and subclasses thereunder; 57, Casting apparatus; 75, Casting apparatus, Moving mold, and subclasses thereunder.
42. **BLOCK-MOLDING MACHINES, FLAT TILE.** Machines for molding floor and wall tiles and ornamental tiles.
43. **BLOCK-MOLDING MACHINES, ROOFING-TILE.** Machines for molding roofing-tiles. They usually have means for forming the tiles so that they will overlap, as by forming a flange at one end and a groove at the other.
- Note.**—Those which are expressed through a die are classified in subclass 11, "Die-expressing" and its subclasses in this class.
44. **BLOCK - MOLDING MACHINES, UNDERCUTTING.** Machines which undercut the back of the tile or other block so that it may be more securely held in position.
45. **BLOCK-PRESSES.** Miscellaneous machines which form blocks and briquets by direct pressure in a mold; also includes miscellaneous parts of such presses not elsewhere classified.
- Search Classes—**
22—METAL FOUNDDING, subclasses 42, Molding apparatus, Packing sand, Presses, and subclasses thereunder; 46, Molding apparatus, Packing sand, Press heads and plungers.
31—DAIRY, subclass 25, Butter workers and molds.
49—GLASS, subclasses 8, Combined machines, Pressing and blowing; 35, Molding presses; 72, Molds, Pressing, and subclasses under each.
131—TOBACCO, subclass 14, Plug-making.
- BLOCK-PRESSES, PORTABLE MOLD.** Machines for forming blocks of plastic material in which the molds are adapted to be carried away from the press after having been filled. The material is usually molded in a wet or soft condition, forming what is known as "soft-clay" bricks.
46. **BLOCK-PRESSES, PORTABLE MOLD, MOVABLE SUPPORT, TOWARD FEED.** Block-presses in which a movable support carries the mold toward the filling-orifice, thus obtaining an additional force to compact the material in the mold.
47. **BLOCK-PRESSES, PORTABLE MOLD, MOVABLE SUPPORT, TRANSVERSE TO FEED.** Block-presses in which a movable support carries the mold transversely or at right angles to the line of feed from the filling-orifice.
48. **BLOCK-PRESSES, PORTABLE MOLD, SUPPORTED IN RACE.** Machines of the portable-mold type in which the molds are advanced to the filling-orifice through a race or way, usually being advanced automatically by a reciprocating pusher. A forcing-screw is most commonly used to compact the material in the molds.
49. **BLOCK-PRESSES, PORTABLE MOLD, SUPPORTED IN RACE, PLUNGER.** Block-presses of this type and not included in the following three subclasses in which the material is expelled through the filling-orifice and into the molds by a plunger or in which the material drops into the molds and is then compacted by a plunger located in the mold-race beyond the filling-orifice.
50. **BLOCK-PRESSES, PORTABLE MOLD, SUPPORTED IN RACE, PLUNGER, LEVER.** Block-presses in which the expelling or compacting plunger is operated directly by a lever.
51. **BLOCK-PRESSES, PORTABLE MOLD, SUPPORTED IN RACE, PLUNGER, PITMAN.** Block-presses in which the expelling or compacting plunger is operated directly by a pitman.
52. **BLOCK-PRESSES, PORTABLE MOLD, SUPPORTED IN RACE, PLUNGER, RACK AND PINION.** Block-presses in which the expelling or compacting plunger is operated directly by a rack and pinion.
53. **BLOCK-PRESSES, PORTABLE MOLD, MOLD-PUSHERS.** Improvements in devices for advancing the mold in the race to the filling-orifice and removing it therefrom.
54. **BLOCK-PRESSES, RECIPROCATING MOLD.** Block-presses in which the mold has a reciprocating movement, but is not to be removed from the press and not included in the following eight subclasses.
55. **BLOCK-PRESSES, RECIPROCATING MOLD, FLUID-OPERATED.** Block-presses in which the mold or the plunger, or both, are operated by means of a fluid.
- Search Class—**
25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 16, Die-expressing, Plunger-ejector, Fluid-operated; 23, Pottery-machines, Fluid-operated; 31, Pipe-machines, Fluid-operated; 63, Block-presses, Rotary mold, Fluid-operated;

CLASS 25—Continued.

- 84, Block-presses, Stationary mold, Single-surface plunger, Fluid-operated; 91, Block-presses, Stationary mold, Opposed plunger, Fluid-operated.
56. **BLOCK-PRESSES, RECIPROCATING MOLD, PLUNGER, IN LINE OF MOLD TRAVEL.** Block-presses which have a plunger reciprocating in the line of travel of the mold. Usually the mold, which is open at two opposite sides, moves up to a stationary plate or plunger, so as to close one side, and then the movable plunger advances through the other side of the mold to press the block. When the mold retreats in the same direction as the movable plunger, it has a quicker movement than the plunger, so as to eject the block. This subclass includes only those in which the plunger is not operated in the manner of the following three subclasses.
57. **BLOCK-PRESSES, RECIPROCATING MOLD, PLUNGER, IN LINE OF MOLD TRAVEL, CAM.** Block-presses of this type in which the plunger is operated directly by a cam.
58. **BLOCK-PRESSES, RECIPROCATING MOLD, PLUNGER, IN LINE OF MOLD TRAVEL, DROP.** Block-presses in which the plunger is raised in any suitable manner and then allowed to drop by gravity to compact the material.
59. **BLOCK-PRESSES, RECIPROCATING MOLD, PLUNGER, IN LINE OF MOLD TRAVEL, LEVER.** Block-presses in which the plunger is operated directly by a lever.
60. **BLOCK-PRESSES, RECIPROCATING MOLD, PLUNGER, TRANSVERSE TO MOLD TRAVEL.** Block-presses in which the plunger reciprocates transversely or at right angles to the line of travel of the mold. The molds are presented on alternate movements to the compressing-plunger or else have plungers mounted in them to be operated by some means, such as cams, during the movement of the mold. This subclass includes those of this type not classified in the following two subclasses.
61. **BLOCK-PRESSES, RECIPROCATING MOLD, PLUNGER, TRANSVERSE TO MOLD TRAVEL, CAM.** Block-presses in which the plunger is operated by a cam.
62. **BLOCK-PRESSES, RECIPROCATING MOLD, PLUNGER, TRANSVERSE TO MOLD TRAVEL, LEVER.** Block-presses in which the plunger is operated by a lever.
- BLOCK-PRESSES, ROTARY MOLD.** Under this head are included machines for forming blocks from plastic material in which the molds rotate around an axis. There are usually a series of molds formed in a wheel or mold-table, which is rotated so as to bring each mold successively into position for charging and pressing.
63. **BLOCK-PRESSES, ROTARY MOLD, FLUID-OPERATED.** Rotary mold block-presses in which the mold-wheel or the plungers, or both, are operated by means of a fluid.
- Search Class—**
25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 16, Die-expressing, Plunger-ejector, Fluid-operated; 23, Pottery-machines, Fluid-operated; 31, Pipe-machines, Fluid-operated; 55, Block-presses, Reciprocating mold, Fluid-operated; 84, Block-presses, Stationary mold, Single-surface plunger, Fluid-operated, and 91, Block-presses, Stationary mold, Opposed plunger, Fluid-operated.
- BLOCK-PRESSES, ROTARY MOLD, FACIAL.** Under the head of "Facial" are included those presses in which the molds are mounted in and open from the side face or plane surface of the wheel or table.
64. **BLOCK-PRESSES, ROTARY MOLD, FACIAL, CONTINUOUS.** Rotary mold block-presses of the facial type not falling in the next subclass and having continuous rotation given to the mold-wheel.
65. **BLOCK-PRESSES, ROTARY MOLD, FACIAL, CONTINUOUS, PLUNGER, CAM.** Rotary mold block-presses in which the material is pressed by cam-operated plungers.
66. **BLOCK-PRESSES, ROTARY MOLD, FACIAL, INTERMITTENT.** Rotary-mold block-presses of the facial type in which the intermittent motion is given to the mold-wheel and not in the next two subclasses.
67. **BLOCK-PRESSES, ROTARY MOLD, FACIAL, INTERMITTENT, OPPOSED PLUNGER.** Rotary-mold block-presses in which the material is pressed on two opposite surfaces by plungers which are moved toward each other.
68. **BLOCK-PRESSES, ROTARY MOLD, FACIAL, INTERMITTENT, OPPOSED PLUNGER, LEVER.** Rotary mold block-presses of this type in which the plungers are operated directly by levers.
69. **BLOCK-PRESSES, ROTARY MOLD, FACIAL, INTERMITTENT, SINGLE-SURFACE PLUNGER.** Miscellaneous rotary-mold block-presses of this type in which the material is pressed by plungers which act on only one surface.
70. **BLOCK-PRESSES, ROTARY MOLD, FACIAL, INTERMITTENT, SINGLE-SURFACE PLUNGER, CAM.** Rotary mold block-presses in which the plungers are operated directly by cams.

CLASS 25—Continued.

71. **BLOCK-PRESSES, ROTARY MOLD, FACIAL, INTERMITTENT, SINGLE-SURFACE PLUNGER, DROP.** Rotary mold block-presses in which the plungers are raised by any suitable means and then allowed to drop by gravity.
72. **BLOCK-PRESSES, ROTARY MOLD, FACIAL, INTERMITTENT, SINGLE-SURFACE PLUNGER, LEVER.** Rotary mold block-presses in which the plungers are operated directly by levers, except toggle-levers.
73. **BLOCK-PRESSES, ROTARY MOLD, FACIAL, INTERMITTENT, SINGLE-SURFACE PLUNGER, PITMAN.** Rotary mold block-presses in which the plungers are operated directly by pitmen.
74. **BLOCK-PRESSES, ROTARY MOLD, FACIAL, INTERMITTENT, SINGLE-SURFACE PLUNGER, TOGGLE.** Rotary mold block-presses in which the plungers are operated directly by toggles.
- BLOCK-PRESSES, ROTARY MOLD, PERIPHERAL.** Under the head of "Peripheral" are included those in which the molds are mounted in and open from the periphery or curved surface of the wheel or table.
75. **BLOCK-PRESSES, ROTARY MOLD, PERIPHERAL, CONTINUOUS.** Rotary peripheral mold block-presses in which the mold-wheel is rotated continuously and not falling in the next four subclasses.
76. **BLOCK-PRESSES, ROTARY MOLD, PERIPHERAL, CONTINUOUS, OPPOSED MOLD-WHEEL.** Rotary peripheral mold block-presses in which the block is pressed in the mold-wheel by another mold-wheel. Usually the molds in the two mold-wheels are presented alternately to smooth portions between the molds.
77. **BLOCK-PRESSES, ROTARY MOLD, PERIPHERAL, CONTINUOUS, OPPOSED MOLD-WHEEL, MATING.** Rotary peripheral mold block-presses in which the block is formed partly in one mold-wheel and partly in another, the portion of the mold in one wheel mating with the portion in the other as the two are rotated.
78. **BLOCK-PRESSES, ROTARY MOLD, PERIPHERAL, CONTINUOUS, PLUNGER, CAM.** Rotary peripheral mold block-presses in which the material is pressed by plungers operated by cams.
79. **BLOCK-PRESSES, ROTARY MOLD, PERIPHERAL, CONTINUOUS, PRESSURE-ROLLER.** Rotary peripheral mold block-presses in which the block is pressed in the mold-wheel by a pressure-roller which does not itself constitute a mold-wheel.
80. **BLOCK-PRESSES, ROTARY MOLD, PERIPHERAL, INTERMITTENT.** Rotary peripheral mold block-presses in which intermittent motion is given to the mold-wheel and not in the next two subclasses.
81. **BLOCK-PRESSES, ROTARY MOLD, PERIPHERAL, INTERMITTENT, PLUNGER, CAM.** Rotary peripheral mold block-presses in which the plungers are operated directly by cams.
82. **BLOCK-PRESSES, ROTARY MOLD, PERIPHERAL, INTERMITTENT, PLUNGER, LEVER.** Rotary peripheral mold block-presses in which the plungers are operated directly by levers.
- BLOCK-PRESSES, STATIONARY MOLD.** Machines for forming blocks from plastic material by pressing it in stationary molds. The molds have at least four fixed sides, the ends usually being open.
83. **BLOCK-PRESSES, STATIONARY MOLD, SINGLE-SURFACE PLUNGER.** Stationary mold block-presses in which the material is pressed by plungers which act on only one surface and not falling in the next six subclasses. In the single-surface-plunger type there is very often an opposed plunger to eject the block after it is pressed, but which remains at rest during the pressing operation.
84. **BLOCK-PRESSES, STATIONARY MOLD, SINGLE-SURFACE PLUNGER, FLUID-OPERATED.** Stationary mold block-presses of this type in which the plungers are operated by means of a fluid.
- Search Class—**
25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 16, Die-expressing, Plunger-ejector, Fluid-operated; 23, Pottery-machines, Fluid-operated; 31, Pipe-machines, Fluid-operated; 55, Block-presses, Reciprocating mold, Fluid-operated; 63, Block-presses, Rotary mold, Fluid-operated, and 91, Block-presses, Stationary mold, Opposed plunger, Fluid-operated.
85. **BLOCK-PRESSES, STATIONARY MOLD, SINGLE-SURFACE PLUNGER, CAM.** Stationary mold block-presses in which the plungers are operated directly by cams.
86. **BLOCK-PRESSES, STATIONARY MOLD, SINGLE-SURFACE PLUNGER, DROP.** Stationary mold block-presses in which the plungers are raised by any suitable means and then allowed to drop by gravity.

CLASS 25—Continued.

87. BLOCK-PRESSES, STATIONARY MOLD, SINGLE-SURFACE PLUNGER, LEVER. Stationary mold block-presses in which the plungers are operated directly by levers, except toggle-levers, which are in subclass 89 of this class.
88. BLOCK-PRESSES, STATIONARY MOLD, SINGLE-SURFACE PLUNGER, PITMAN. Stationary mold block-presses in which the plungers are operated directly by pitmen.
89. BLOCK-PRESSES, STATIONARY MOLD, SINGLE-SURFACE PLUNGER, TOGGLE. Stationary mold block-presses in which the plungers are operated directly by toggles.
90. BLOCK-PRESSES, STATIONARY MOLD, OPPOSED PLUNGER. Those in which the material is pressed on two opposite surfaces by plungers which are moved toward each other during the pressing operation and not in the next eight subclasses.
91. BLOCK-PRESSES, STATIONARY MOLD, OPPOSED PLUNGER, FLUID-OPERATED. Stationary mold block-presses in which the plungers are operated by means of a fluid.
- Search Class—**
25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 16, Die-expressing, Plunger-ejector, Fluid-operated; 23, Pottery-machines, Fluid-operated; 31, Pipe-machines, Fluid-operated; 55, Block-presses, Reciprocating mold, Fluid-operated; 63, Block-presses, Rotary mold, Fluid-operated, and 84, Block-presses, Stationary mold, Single-surface plunger, Fluid-operated.
92. BLOCK-PRESSES, STATIONARY MOLD, OPPOSED PLUNGER, CAM. Stationary mold block-presses in which both plungers or both sets of plungers are operated directly by cams.
93. BLOCK-PRESSES, STATIONARY MOLD, OPPOSED PLUNGER, CAM AND LEVER. Stationary mold block-presses in which one plunger or one set of plungers is operated directly by a cam, while the opposite plunger or set is operated directly by a lever.
94. BLOCK-PRESSES, STATIONARY MOLD, OPPOSED PLUNGER, CAM AND PITMAN. Stationary mold block-presses in which one plunger or one set of plungers is operated directly by a cam, while the opposite plunger or set is operated directly by a pitman.
95. BLOCK-PRESSES, STATIONARY MOLD, OPPOSED PLUNGER, LEVER. Stationary mold block presses in which the plungers are operated directly by levers, except toggle-levers, which are in subclasses 97 and 98 in this class.
96. BLOCK-PRESSES, STATIONARY MOLD, OPPOSED PLUNGER, PITMAN. Stationary mold block-presses in which the plungers are operated directly by pitmen.
97. BLOCK-PRESSES, STATIONARY MOLD, OPPOSED PLUNGER, TOGGLE. Stationary mold block-presses in which the plungers are operated directly by toggles.
98. BLOCK-PRESSES, STATIONARY MOLD, OPPOSED PLUNGER, TOGGLE AND CONNECTING BAR. Stationary mold block-presses in which one plunger or one set of plungers is operated directly by a toggle, while the other plunger or set is operated through the same toggle by means of a connecting-bar.
99. BLOCK-PRESSES, ENDLESS CHAIN OF MOLDS, CONTINUOUS TRAVEL. Block-presses in which the molds are connected so as to form an endless chain, which is moved continuously.
100. BLOCK-PRESSES, ENDLESS CHAIN OF MOLDS, INTERMITTENT TRAVEL. Block-presses in which the molds are connected so as to form an endless chain, which is moved intermittently. By reason of the intermittent movement it is usual to employ plunger mechanism to press the material in the intervals between the successive movements of the chain.
101. BLOCK-PRESSES, EXPANDING MOLD. Block-presses in which at least two adjacent sides of the mold are movable with respect to each other.
102. BLOCK-PRESSES, PLUNGERS. Improvements in plungers which are used with block-presses.
103. BLOCK-PRESSES, CHARGERS. Improvements in devices which are used to charge the mold with material.
104. BLOCK-PRESSES, STRIKES AND TRIMMERS. Devices for striking, scraping, or trimming the material from the top of the mold.
105. CUTTERS. Miscellaneous devices for cutting the material. Most of the patents under "Cutters" and its subclasses are for devices which cut the material to the required length as it is expressed through a die in a continuous stream. They include wire-cutters for forming wire-cut bricks.

Search Classes—

- 17—BUTCHERING, subclass 24, Meat-cutters, Slicers.
31—DAIRY, subclasses 64, Butter, Cutters, and 68, Cheese, Cutters.
83—MILLS, subclass 61, Sugar and salt crushers.

CLASS 25—Continued.

106. CUTTERS, SOAP. Cutters used for cutting soap. They are for the most part unlike the cutters which are used for cutting clay and similar material, but when considered useful as references in the subclasses based on the operation of the cutter will be cross-referenced into those subclasses.
107. CUTTERS, RECIPROCATING. Miscellaneous reciprocating cutters, including those not classified in the next subclass. **Note.**—Machines which form a slab or bar of plastic material and then cut it up into blocks by means of a cutter in the form of a mold which incloses a plunger to eject the block are classified in the appropriate subclasses preceding and cross-referenced into this subclass.
108. CUTTERS, RECIPROCATING, HORIZONTALLY. Machines in which the cutter reciprocates in a horizontal direction during the cutting operation.
109. CUTTERS, ROTATING, LONGITUDINAL AXIS. Cutters which rotate on an axis which extends in the same direction as that in which the bar to be cut travels.
110. CUTTERS, ROTATING, TRANSVERSE AXIS. Cutters which rotate on an axis which extends transversely or at right angles to the direction in which the bar to be cut travels.
111. CUTTERS, OSCILLATING. Cutters which oscillate or move through part of a circle without making a complete rotation during the cutting operation.
112. CUTTERS, STATIONARY. Cutters which are not moved during the cutting operation, the material to be cut being pushed against the cutters.
113. CUTTERS, TABLES. Improvements in the table upon which the material is cut. Includes devices for separating the articles after they are cut.
114. CUTTERS, CLEANERS. Improvements in devices for cleaning the cutters.
115. SANDERS. Devices for applying sand directly to the surface of bricks. A few patents also have means for roughening the bricks.
116. SANDERS, MOLD. Sanders which apply sand to the molds.
117. SANDERS, MOLD, ROTARY DRUM. Sanders in which the molds to be sanded are rotated in a drum or cylinder.
118. MOLDS. Miscellaneous molds for forming articles of earthenware or artificial-stone composition.
- Search Classes—**
18—PLASTICS, especially subclass 34, Molding devices, Molds.
22—METAL-FOUNDING, subclass 113, Molds, and subclasses thereunder.
31—DAIRY, subclass 25, Butter workers and molds.
49—GLASS, subclasses 8, Combined machines, Pressing and blowing; 35, Molding, Presses; 72, Molds, Pressing; and subclasses under each of these.
119. MOLDS, BLOCK. Molds used for forming blocks of plastic material not classified in the other subclasses.
- Search Class—**
22—METAL-FOUNDING, subclasses 96, Flasks; 139, Molds, Metal, Ingots and pigs; and subclasses under each of these.
120. MOLDS, BLOCK, EJECTORS. Molds which have means for ejecting the blocks from the mold.
- Search Class—**
25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 28, Pottery-machines, Presses, Bottom ejectors.
121. MOLDS, BLOCK, EXPANDING AND SEPARABLE. Molds which are expanded or separated in order to remove the blocks.
- Search Class—**
25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 101, Block-presses, Expanding mold.
122. MOLDS, BLOCK, LININGS. Improvements in lining for block-molds.
123. MOLDS, BLOCK, ORNAMENTAL. Molds used to form ornamental blocks.
- Search Class—**
25—PLASTIC BLOCKS AND EARTHENWARE APPARATUS, subclasses 41, Block-molding machines, and 42, Block-molding machines, Flat tile.
124. MOLDS, CISTERN. Molds used in forming cisterns or similar reservoirs of cement or concrete. **Note.**—Permanent structures for cisterns and similar reservoirs are classified in class 72, MASONRY AND CONCRETE STRUCTURES, subclass 9, Cisterns.
125. MOLDS, FENCE. Molds used in forming fences of earth or cement.
126. MOLDS, PIPE. Molds used in forming pipe of cement or similar material and not included in the next two subclasses.
- Search Class—**
22—METAL-FOUNDING, subclasses 17, Molding apparatus, Pipes vertical, Compacting pattern; subclasses thereunder; 140, Molds, Metal, Ingots and pigs, Hollow; and 165, Cores.

CLASS 25—Continued.

127. **MOLDS, PIPE, EXPANDING AND SEPARABLE.** Molds which are expanded or separated in order to remove the pipe.
128. **MOLDS, PIPE, CORES.** Improvements in cores used in this type of molds.
129. **MOLDS, POTTERY.** Molds used in forming pottery-ware.
130. **MOLDS, SARCOPHAGI AND TANK.** Molds used in forming burial cases, tanks, or similar receptacles of cement or artificial-stone composition.
131. **MOLDS, WALL.** Molds which are used in building up walls from concrete or similar material.
- 131.5. **MOLDS, CENTERING.** All such temporary means for casting concrete floor arches, bridges, and the like, *in situ*, as are not otherwise provided for in this class.
132. **KILNS.** Apparatus for burning and hardening earthenware and plastic blocks, usually clay bricks or pottery-ware, and not classifiable in any of the other subclasses; also, miscellaneous parts of kilns.
Note.—Kilns for burning lime and cement are classified in class 222, **HYDRAULIC CEMENT AND LIME.** Kilns which dry but do not burn are classified in class 34, **DRIERS.**
- Search Classes—**
34—DRIERS, subclass 19, Houses and kilns; **107, BREAD, PASTRY, AND CONFECTION MAKING,** subclass 55, Bakers' ovens, and subclasses thereunder; and in **222, HYDRAULIC CEMENT AND LIME,** subclass 3, Kilns.
133. **KILNS, INDURATING.** Apparatus for treating artificial stone to harden it, usually by subjecting the material to the action of steam, carbon dioxide, or other vapor in a kiln or closed chamber.
134. **KILNS, CONTINUOUS.** Kilns in which the heat passes from one compartment to another.
135. **KILNS, CONTINUOUS, SEPARATE KILN.** Kilns which have a plurality of chambers that exist as separate structures.
136. **KILNS, CONTINUOUS, PERFORATED FLOOR.** Kilns in which the heat passes from one compartment into the next through perforations in the floor.
137. **KILNS, CONTINUOUS, PERFORATED PARTITION.** Kilns in which the heat passes from one compartment into the next through perforations in the dividing-partition.
138. **KILNS, CONTINUOUS, TEMPORARY-PARTITION.** Kilns in which the partitions between adjacent chambers are destructible, as when made of paper or removable in the manner of a curtain or slide.
139. **KILNS, CONTINUOUS, COMMON FLUE.** Kilns which have a flue common to all the compartments, the heat being conducted into or out of the various compartments by branch flues connecting with the common flue.
140. **KILNS, COMBINED UP AND DOWN DRAFT.** Kilns in which the heat is admitted at the top and bottom simultaneously, thus producing an updraft at the bottom and a down-draft at the top.
141. **KILNS, COMBINED UP AND DOWN DRAFT, REVERSIBLE.** Kilns which can be changed from updraft to down-draft, and vice versa, by means of dampers.
142. **KILNS, HORIZONTALLY-TRAVELING MATERIAL.** Kilns in which the material to be burned travels, usually on trucks or platforms, in a substantially horizontal plane during the burning operation.
Search Class—
34—DRIERS, subclasses 12, Endless carrier; 46, Truck and rail, Horizontal, and 47, Truck and rail, Inclined.
143. **KILNS, VERTICALLY-TRAVELING MATERIAL.** Kilns in which the material to be burned travels vertically, usually from the top downward, during the burning operation.
Search Class—
34—DRIERS, subclasses 11, Elevator, and 12, Endless carrier.
144. **KILNS, MUFFLE.** Kilns which have muffles to prevent the flame from coming into direct contact with the material which is being burned.
Search Classes—
75—METALLURGY, subclass 137, Roasters, Muffle; **126, STOVES AND FURNACES,** subclass 236, Tool heaters, Soldering iron, and subclasses thereunder, and **143, ANNEALING AND TEMPERING,** subclass 16, Annealing apparatus, Muffles.
145. **KILNS, DOWNDRAFT.** Kilns in which the heat is conveyed to the top and passed downwardly through the material which is being burned. Bag or flash walls of various construction are provided for guiding the first part of the flame upward before striking the top of the material.

CLASS 25—Continued.

146. **KILNS, DOWNDRAFT, MUFFLE-BOTTOM.** Kilns in which the heat is conveyed underneath the floor and then to the top and passed downwardly through the material. The material is thus heated from the bottom on the muffle principle and from the top on the downdraft principle.
147. **KILNS, UPDRAFT.** Kilns in which the heat is admitted at the bottom and passed upwardly through the material which is being burned. Open-top kilns operate on this principle.
Search Class—
107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 55, Bakers' ovens, and subclasses thereunder.
148. **KILNS, FORCED-DRAFT.** Kilns which have a blast or an exhaust for producing a forced draft.
149. **KILNS, FLUID-FUEL.** Kilns which are adapted to use gas or liquid for fuel.
150. **KILNS, STEAM-COMBUSTION.** Kilns especially arranged to have steam introduced to assist the combustion.
Search Class—
110—FURNACES, subclass 79, Furnace structure, Feeding steam.
151. **KILNS, FURNACES.** Furnaces specially adapted for use in connection with the type of kilns in this class.
Search Classes—
75—METALLURGY, subclass 40, Furnaces, Blank.
110—FURNACES.
126—STOVES AND FURNACES, subclass 224, Trash burners, Domestic refuse burners.
152. **KILNS, FURNACES, GRATES.** Grates used with the type of furnace in the preceding subclass.
Search Classes—
110—FURNACES, subclass 74, Hollow grate.
126—STOVES AND FURNACES, subclasses 152, Grates, and 167, Grates, Grate-bar.
153. **KILNS, SAGGERS.** Devices for protecting and supporting articles in the kiln while they are being burned.
154. **PROCESSES, REINFORCING AND FINISHING.** Purely manipulative processes, except as noted below, involving the use of a mold or die and involving the introduction of reinforcement into clay or other natural plastic or into concrete or involving a special distribution of the usual components of concrete to produce a "neat" or uniformly dense face upon the formed object.
Search Classes—
18—PLASTICS, for miscellaneous processes of applying a facing material to a plastic composition while the latter is still green.
41—ORNAMENTATION, for processes of coating which involve a transfer operation or a hand operation.
72—MASONRY AND CONCRETE STRUCTURES, for reinforced or faced blocks or walls.
91—COATING, for processes of coating objects from plastic or other material without molding or a transfer operation or a hand operation.
155. **PROCESSES, CONCRETE BLOCK TYPE.** Purely manipulative processes of conditioning or handling moistened lime or cement mixed with sand, stone, or other inert granular and aggregate material and processes performed during the placing or settling of the above-mentioned materials in the formation of objects therefrom, excepting processes of reinforcing or facing.
Search Class—
18—PLASTICS, for processes involving a special manipulation of compositions not referred to in the above definition.
156. **PROCESSES, CLAY TYPE.** Processes, except as noted below, of conditioning clay, slate, or any natural plastic or of handling the same in the production of formed objects therefrom and processes which involve the application of a specific combustible coating composition to an object formed from such material to preserve its form until fired.
Search Classes—
18—PLASTICS, for processes of handling compositions of which clay or other natural plastic is merely an ingredient and for processes of facing objects of clay while green.
25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 157, Processes, Clay type, Firing, for methods of firing.
91—COATING, for processes of coating objects of clay or the like after burning.
106—PLASTIC COMPOSITIONS, for compositions containing natural plastics.
157. **PROCESSES, CLAY TYPE, FIRING.** Processes which are used in connection with the burning of earthenware articles in kilns.
Note.—Subclasses 157 and 158 contain patents from former subclasses 154 and 155, respectively, abolished and replaced by present subclasses 154 and 155.
158. **PROCESSES, CLAY TYPE, FIRING, ROAD BALLAST.** Processes of burning clay or other natural plastic in the production of formless aggregates, such as may be used for road ballast.
Note.—Subclasses 157 and 158 contain patents from former subclasses 154 and 155, respectively, abolished and replaced by present subclasses 154 and 155.



CLASS 29.—METAL-WORKING.

DEFINITIONS.

Class.

The generic class of metal working or shaping. It comprises blanks, processes, and apparatus not classifiable in the specific classes relating to the manufacture of articles from metal. It includes, also, means which comprise a plurality of operations which separately might be classified in the specific classes, but which by their joinder include more than is covered by the definitions of such specific classes. It also includes metal stock adapted to be worked up into various articles.

Subclasses.

1. MISCELLANEOUS. Miscellaneous metal-working machines which are not otherwise classifiable.
2. SPECIAL WORK, BATTERY-GRID MAKING. Machines and processes for making metallic "grids" for electric batteries.
3. SPECIAL WORK, BUCKLE-MAKING. Machines and processes for making the parts of buckles and for assembling the same. This subclass includes the manufacture of buckles from rods, wires, plates, or sheets of metal.
4. SPECIAL WORK, BUTTON-FASTENER MAKING. Machines and processes for making metallic fastening devices for buttons having a shank provided with an eye, as shoe-buttons, etc.
- 4.5. SPECIAL WORK, COMMUNUTING METAL. Machines for reducing metal to small particles or shreds by cutting operations.
Search Classes—
75—METALLURGY, subclass 197 Miscellaneous.
83—MILLS, subclass 91 Liquid Communiting and Solidifying, for comminuting molten metal.
164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 10.6, Scrap cutting.

5. SPECIAL WORK, COTTER-PIN MAKING. Machines and processes for forming cotter-pins or split keys, which includes other operations than cutting the stock and bending the same.
Note.—Machines for merely bending or cutting and bending are classified in class 153, METAL-BENDING.

Search Class—

- 29—METAL WORKING, subclass 13, Special work, Paper-fastener making, for analogous machines.
59—CHAIN, STAPLE AND HORSESHOE MAKING, subclass 71, Staple making and subclasses thereunder.

6. SPECIAL WORK, CRANK-SHAFT MAKING. Machines and processes for bending, forging, and, in some instances, performing other operations upon crank-shafts.

7. SPECIAL WORK, EYEBOLT AND HOOK MAKING. Machines and processes for making eyebolts, hooks, etc., which comprise more than bending, with the incidental operation of cutting the stock.

Note.—Machines for merely bending rods into the form of hooks are classified in class 153, METAL-BENDING.

8. SPECIAL WORK, FINGER-RING FORMING AND SIZING. Machines for forming finger-rings by die-cutting a flat ring from a disk and subsequently swaging or die-shaping it into the desired form. It also contains machines and devices for stretching or contracting rings by dies.

Note.—Machines for forming and stretching rings by means of rolls are classified in class 80, METAL-ROLLING, subclass 5, Annular bodies.

Note.—Molds especially adapted for the casting of finger-rings are classified in class 22, METAL-FOUNDING, subclass 114, Molds, Finger-ring.

9. SPECIAL WORK, FISH-HOOK MAKING. Machines and processes for making fish-hooks, including shaping, pointing, and barbing.

10. SPECIAL WORK, GEM AND JEWEL SETTING. Machines and processes for cutting the sockets for gems or jewels and for securing them in the same. This subclass includes jewel-holders, feeding devices for jewel-setting machines, jewel-burnishing devices, etc.

Search Classes—

- 81—TOOLS, subclass 7, Special, Watchmakers', Jewel setters.
125—STONE-WORKING, subclass 4, Diamond-tools.

11. SPECIAL WORK, HINGE MAKING AND ASSEMBLING. Machines and processes for making the parts of hinges and assembling the same, also machines which merely assemble hinges. The operations performed are mainly die-cutting, milling, or broaching to finish the interlocking parts, bending the sleeve, and inserting the pin.

Search Class—

- 29—METAL WORKING, subclass 3, Special work, Buckle-making.

CLASS 29—Continued.

12. SPECIAL WORK, LACING-STUD MAKING. Machines and processes for making lacing-studs from rods, wire, or specially-prepared stock.

Search Classes—

- 18—PLASTICS, subclass 37, Molding devices, Molds, Blank covering and filling, Lacing hooks and studs, for molds for covering lacing-studs with a plastic material.

- 113—SHEET-METAL WARE, MAKING, subclass 40.5, Die-shaping, Lacing-studs, for machines for making lacing-studs from sheet metal.

13. SPECIAL WORK, PAPER-FASTENER MAKING. Machines and processes for making insertible paper-fasteners.

Search Classes—

- 29—METAL WORKING, subclass 5, Special work, Cotter-pin making.

- 59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 71, Staple making, and subclasses thereunder.

14. SPECIAL WORK, PLOW AND CULTIVATOR IRONS, MAKING. Patents upon machines and processes for making irons which form parts of plows, also cultivator-irons, harrow-irons, clevises, etc.

Search Class—

- 78—METAL FORGING AND WELDING, subclass 68.5, Dies, Plow and cultivator-irons, for dies for forging plow and cultivator irons.

15. SPECIAL WORK, PUDDLERS' BALLS, WORKING. Machines and processes for compressing by rolling, squeezing, etc., puddlers' balls for the purpose of expelling the slag or cinder.

16. SPECIAL WORK, RAILWAY-CHAIR MAKING. Machines and processes for making railway-chairs.

17. SPECIAL WORK, SHEET-METAL AND FOIL MANUFACTURE. Machines specially adapted to manufacture thin sheet metal and foil.

Note.—Machines for rolling sheet metal in packs or otherwise in which there are performed only such operations as are common to metal-rolling are classified in the appropriate subclasses of class 80, METAL-ROLLING.

18. SPECIAL WORK, SHEET-METAL AND FOIL MANUFACTURE, PROCESSES. Processes for forming thin sheet metal and metal foil.

Search Class—

- 29—METAL-WORKING, subclass 189, Metal stock, Processes, Compound plate.

19. SPECIAL WORK, SHEET-METAL AND FOIL MANUFACTURE, PROCESSES, PACK MANIPULATION. Processes of arranging and manipulating packs of sheet metal in the manufacture of thin sheet metal and foil.

20. SPECIAL WORK, SPECTACLE-FRAME MAKING. Machines and processes for making spectacle-frames, temples, bridge-pieces, etc.

21. SPECIAL WORK, STEREOTYPE-PLATE FINISHING. Machines and processes for finishing plane or curved stereotype-plates by beveling the edges, grooving, or finishing the ribs upon the back of the plates.

Note.—Apparatus for casting stereotype-plates combined with finishing mechanisms are classified in class 22, METAL-FOUNDING, subclass 3, Stereotype-casting apparatus, Combined machines.

Note.—Machines for merely planing the backs of stereotype-plates are classified in class 90, GEAR-CUTTING, MILLING, AND PLANING, subclass 25, Planing, Soft metal, and the subclasses thereunder.

22. SPECIAL WORK, TIRE UPSETTING, CUTTING, PUNCHING, ETC. Combined machines, including tire-upsetting mechanism, punching-machines, cutting-machines, etc.

Note.—Machines for merely upsetting tires are classified in class 78, METAL FORGING AND WELDING, under subclass 55, Forging, Tire-upsetting, and the subclasses thereunder.

23. SPECIAL WORK, TOOTHED-CYLINDER MAKING. Machines and processes for applying and securing metallic teeth to the surface of substantially cylindrical bodies, such as record-rollers for musical instruments and cylinders for textile machinery in which the teeth are secured directly to the cylinder.

Note.—Devices for applying card-clothing are classified in class 140, WIRE-WORKING.

- 23.5. SPECIAL WORK, TURBINE-BLADE MAKING. Machines and methods for forming and mounting the blades of turbines.

24. SPECIAL WORK, TYPE FINISHING AND GROOVING. Machines and processes for breaking the "jets" from type, removing pins or burs, and for grooving type.

CLASS 29—Continued.

Note.—Machines for casting type in combination with mechanism for finishing are classified in class 22, METAL-FOUNDING, subclass 7, Type-casting apparatus, Combined machines.

Search Class—

90—GEAR-CUTTING, MILLING, AND PLANING, subclass 25, Planing, Soft metal.

25. SPECIAL WORK, UMBRELLA-FRAME MAKING. Machines for forming and assembling umbrella-frames; includes the forging of the ribs, the shaping and assembling of the various attachments to the ribs, such as the forks, notches, tips, etc.

Note.—Machines for merely die-shaping the various elements from sheet metal are classified in the general operation subclasses of class 113, SHEET-METAL WARE, MAKING, or class 78, METAL FORGING AND WELDING.

26. COMBINED MACHINES, TYPE OF MACHINE, DRILL-PRESS. Combined machines adapted to perform various functions, such as drilling, boring, milling, etc., in which the mechanism for adjusting and for operating the drilling or boring mechanism are the dominating features.

Search Class—

77—BORING AND DRILLING, subclass 4, Boring-machines, Vertical.

27. COMBINED MACHINES, TYPE OF MACHINE, LATHE. Combined machines which are characterized by mechanisms for rotating the work while a cutting or milling tool is traversing the work, either externally or internally; also machines in which the tool is rotated about the work.

28. COMBINED MACHINES, TYPE OF MACHINE, LATHE, GRINDING ATTACHMENT. Combined machines characterized by mechanisms for relatively rotating the work and a turning milling tool and which have in addition thereto a grinding mechanism.

29. COMBINED MACHINES, TYPE OF MACHINE, LATHE, PULLEY, AND WHEEL. Combined machines specially adapted to turn, face, and bore or drill pulleys and wheels, and, in some instances, to slot the same. These machines are characterized by the rotation of the work about its axis or by the rotation of the tool about the axis of the work.

Search Classes—

77—BORING AND DRILLING, subclasses 3, Boring-machines, Horizontal, and 4, Boring-machines, Vertical.

82—TURNING, subclasses 7, Lathes, Pulley, and 8, Lathes, Wheel and axle.

30. COMBINED MACHINES, TYPE OF MACHINE, PLANER. Combined machines characterized by a relative reciprocatory movement in substantially a straight line between the work and tool, said tool being a planing-tool, a milling-cutter, or, in some instances, a drill.

31. COMBINED MACHINES, TYPE OF MACHINE, VISE, DRILL, ETC. Combined machines comprising vises to which are attached drills, lathes, punches, cutters, etc.

32. COMBINED MACHINES, TYPE OF MACHINE, VISE, DRILL, ETC., ANVIL-ATTACHED. Combined machines comprising anvils to which are attached various devices, such as vises, drills, cutters, etc.

33. COMBINED MACHINES. Organized machines adapted to perform a plurality of operations upon metal, which operations are not comprised in any one of the various specific metal-working classes. The most of these are automatic machines, such as turret-lathes for performing a definite series of operations upon stock, while the remainder are machines for performing special work or are devices comprising a plurality of distinct machines mounted upon a single frame.

34. COMBINED MACHINES, FORGING, BENDING, CUTTING, AND PUNCHING. Combined machines which are adapted to forge or weld metal and also to perform one or more of the above-mentioned operations upon the metal.

Note.—Forging-machines which have mere incidental cutting or bending mechanisms are classified in class 78, METAL FORGING AND WELDING.

35. COMBINED MACHINES, FORGING AND ROLLING. Combined machines which are adapted to shape metals by both forging and rolling operations.

36. COMBINED MACHINES, TURRET, MULTIPLE TURRET. Machines having two or more turrets for carrying the tools or the stock. Nearly all of these machines have tool-turrets.

37. COMBINED MACHINES, TURRET, STOCK-TURRET. Machines in which bars of metal stock of sufficient length to form more than one completed article are carried by a rotatable turret to the various tools. Multiple-tool holders in these patents are usually cam-operated and are also provided with one or more rotary tools.

38. COMBINED MACHINES, TURRET, BLANK-TURRET. Machines in which the blank, reduced to substantially the length of the finished article, is carried by a turret into positions which enable it to be operated upon by various tools.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 6, Screw-making, Head-nicking, Rotary work-holder; 13, Bolt and rivet making, Rotary multiple dies; 60, Nail-making, Wire nails, Rotary work-holder; 60, Nail-making,

CLASS 29—Continued.

Wrought nails, Spikes, Rotary work-holder; 69, Nail-making, Wrought nails, Horseshoe-nails, Rotary work-holder; 77, Nut and washer making, Forging, Rotary multiple dies, and 158, Capping nails and screws, Rotary work-holder.

39. COMBINED MACHINES, TURRET, TOOL-TURRET. Machines in which some or all of the operating-tools are carried by a rotatable turret and which are not classifiable in the following specific subclasses.

Search Classes—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 13, Bolt and rivet making, Rotary multiple dies, and 93, Screw-threading, Machines, Multiple die, Turret.

77—BORING AND DRILLING, subclass 25, Drilling-machines, Multiple spindle, Turret.

40. COMBINED MACHINES, TURRET, TOOL-TURRET, ROTARY TOOL-HOLDER. Machines having a rotatable turret which is provided with one or more positively-rotated tools.

41. COMBINED MACHINES, TURRET, TOOL-TURRET, SLIDING TOOL-HOLDER. Machines having rotatable tool-turrets in which the tools are mounted upon sliding tool-spindles which are thrust forward against the blank or stock, usually against the pressure of a spring.

42. COMBINED MACHINES, TURRET, TOOL-TURRET, FLUID-OPERATED. Machines having a tool-turret which is advanced toward and retracted from the work by means of fluid-pressure. In some cases fluid-operating mechanism is employed for actuating the supplemental cutting-tools, speed-controllers, etc.

43. COMBINED MACHINES, TURRET, TOOL-TURRET, CAM-OPERATED, LONGITUDINAL TURRET-AXIS. Machines having a rotatable tool-turret turret the axis of which is disposed longitudinally of the lathe-bed and which is advanced toward and retracted from the work-holding chuck by cam-operated mechanisms.

44. COMBINED MACHINES, TURRET, TOOL-TURRET, CAM-OPERATED, TRANSVERSE TURRET-AXIS. Machines having a rotatable tool-holding turret the axis of which is disposed transversely of the lathe-bed (including both vertical and horizontal axes) and which is advanced toward and retracted from the work-holding chuck by cam-operated mechanisms.

45. COMBINED MACHINES, TURRET, TOOL-TURRET, LEVER-OPERATED. Machines having a rotatable tool-turret which is advanced toward and retracted from the stock-holding chuck by means of a lever or a system of levers, usually hand-operated.

46. COMBINED MACHINES, TURRET, TOOL-TURRET RACK-AND-PINION OPERATED. Machines having a rotatable tool-turret which is advanced toward and retracted from the work-holding chuck by rack-and-pinion mechanism.

47. COMBINED MACHINES, TURRET, TOOL-TURRET, SCREW-OPERATED. Machines having a rotatable tool-turret which is advanced toward and retracted from the stock-holding chuck by a screw-feeding mechanism.

48. COMBINED MACHINES, TURRET, TURRETS. The structure of rotatable (turret) tool-holders, comprising the device for securing the tools in the turret and the mechanisms for mounting the turret upon its carriage or upon the lathe-bed.

Search Class—

29—METAL-WORKING, subclass 142, Machine-chucks and tool-sockets, Sockets, Multiple.

49. COMBINED MACHINES, TURRET, TURRET ROTATING AND LOCKING, FRICTIONAL AND POSITIVE. Mechanisms for rotating and locking or for locking the turret from further rotation by means of a friction-clamp or by a clamping or wedging action between the turret and its carriage. In most instances a still further positive lock, such as a bolt or latch, is provided.

50. COMBINED MACHINES, TURRET, TURRET ROTATING AND LOCKING, POSITIVE. Mechanisms for rotating and locking or for locking the turret by means of a sliding bolt, latch, or other positively-engaging device.

Search Classes—

77—BORING AND DRILLING, subclass 64, Appliances, Work-supports, Indexing; 90, GEAR-CUTTING, MILLING, AND PLANING, subclass 57, Indexing, Index-heads, for analogous devices.

51. COMBINED MACHINES, MULTIPLE-TOOL HOLDER, LATERALLY-MOVABLE STOCK-HOLDER. Machines having a non-revoluble tool-holder carrying a plurality of tools (usually rotary) and a stock-holder which is movable laterally to present the stock to the various tools.

52. COMBINED MACHINES, MULTIPLE-TOOL HOLDER, AXIAL TOOL AND TRANSVERSELY-MOVABLE SLIDE-REST. Machines having a non-revoluble tool-holder carrying a plurality of tools which is movable transversely of the machine-bed and having in addition thereto a single tool-holder adapted to operate in the axial line of the chuck.

CLASS 20—Continued.

53. **COMBINED MACHINES, MULTIPLE-TOOL HOLDER, AXIAL TOOL AND TRANSVERSELY-MOVABLE SLIDE-REST, ROTARY TOOL-SPINDLE.** Machines having non-revoluble tool-holders carrying a plurality of tools which are movable transversely of the machine-bed and having in addition thereto a single tool-holder adapted to operate in the axial line of the chuck, one or more of said tool-holders being provided with a rotary tool-spindle. Usually the axial tool is rotatable.
54. **COMBINED MACHINES, MULTIPLE-TOOL HOLDER, LONGITUDINALLY AND TRANSVERSELY MOVABLE.** Machines having a non-revoluble tool-holder carrying a plurality of tools which are adapted to be moved longitudinally of the machine-bed to bring the tools into operation and transversely of the bed to shift the various tools into alignment with the stock or blank holder, or vice versa.
55. **COMBINED MACHINES, MULTIPLE-TOOL HOLDER, LONGITUDINALLY AND TRANSVERSELY MOVABLE, ROTARY TOOL-SPINDLE.** Machines having a non-revoluble tool-holder carrying a plurality of tools provided with one or more positively-rotated tool-spindles supported in such a manner as to be moved longitudinally of the machine-bed to bring the tools into operation and transversely of the bed to shift the various tools into alignment with the stock or blank holder, or vice versa.
56. **COMBINED MACHINES, MULTIPLE-TOOL HOLDER, OSCILLATING TOOL.** Machines having a non-revoluble tool-holder carrying a plurality of tools which are oscillated about a pivot to place the tools into operative position.
57. **COMBINED MACHINES, ATTACHMENTS.** Devices, such as special tool-holders and tool-operating mechanisms, which are adapted to be attached to and removed from combined machines, usually "automatic lathes," for the purpose of performing some special function upon the work.
- Search Class—**
82—TURNING, subclass 34, Lathes, Attachments.
58. **COMBINED MACHINES, STOCK AND BLANK FEEDERS.** Machines and processes for feeding metal stock and blanks to combined machines not included in the following specific subclasses.
- Search Classes—**
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 166, Distributors and feeders, Gripping feeding-jaws.
140—WIRE-WORKING, subclasses 125, Wire-feeding, and 133, Tension devices and subclasses thereunder.
59. **COMBINED MACHINES, STOCK AND BLANK FEEDERS, ADVANCING STOCK-SUPPORT.** Stock-supporting mechanisms which are continually advanced toward the chuck to feed the bar of stock into or through the same.
60. **COMBINED MACHINES, STOCK AND BLANK FEEDERS, MAGAZINE.** Magazines and mechanisms connected therewith for delivering blanks from the magazine to lathe-chucks or blank turrets.
- Search Classes—**
29—METAL-WORKING, subclasses 24, Special work, Type finishing and grooving, and 38, Combined machines, Turret, Blank-turret.
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 162, Distributors and feeders, and the subclasses thereunder.
61. **COMBINED MACHINES, STOCK AND BLANK FEEDERS, RECIPROCATING GRIPPER.** Intermittently-reciprocated gripping mechanisms which grasp the bar of stock, advance to feed the same to the chuck, then release the stock, and return to their first position.
62. **COMBINED MACHINES, STOCK AND BLANK FEEDERS, RECIPROCATING GRIPPER, SLEEVE.** Mechanisms for feeding bars of stock to the chuck, which comprises a sleeve, usually split at the end to form clamping-jaws, which is contained within the hollow chuck-spindle, and is intermittently reciprocated to feed the stock through the chuck.
63. **COMBINED MACHINES, STOCK AND BLANK FEEDERS, ROLLER.** Mechanism for feeding bars of stock to combined machines by means of a roller or pairs or series of rollers.
- Search Class—**
140—WIRE-WORKING, subclasses 125, Wire-feeding, and 133, Tension devices, and subclasses thereunder.
64. **COMBINED MACHINES, SPEED-CONTROLLERS.** Mechanisms for controlling or changing the speed of the various parts of automatic machines during the cycle of operations performed by the machines. The most of the speed controllers in this subclass are automatically operated.
- Search Classes—**
29—METAL WORKING, subclass 42, Combined machines, Turret, Tool-turret, Fluid-operated, for fluid-operated speed controllers.
82—TURNING, subclass 29, Lathes, Head-stocks, Speed-changing gear.
65. **COMBINED MACHINES, CARRIAGE STOP MECHANISMS.** Automatic mechanisms for stopping the feeding of the carriage which supports the turret or multiple-tool or stock holder. These mechanisms are usually provided with devices for stopping the travel of the carriage at various points corresponding to the limit of the operations required by the successively-operating tools.

CLASS 29—Continued.

- Search Classes—**
77—BORING AND DRILLING, subclass 33, Drilling-machines, Feed mechanisms, Automatic stop.
90—GEAR-CUTTING, MILLING, AND PLANING, subclass 51, Planing, Planers, Tool-feeds, Stop mechanisms.
66. **METAL-BREAKERS.** Machines for breaking metal articles, such as pigs, old castings, etc.
- Search Classes—**
83—MILLS, subclass 53, Ore and coal, Crushers.
153—METAL-BENDING, subclass 38, Curving or straightening, Three-point jacks, for similar structures.
67. **SAWING.** Machines and devices whose sole function is severing metal by means of toothed cutters or their equivalent.
- Note.**—Machines which shape the metal acted upon by the cutter or which are designed primarily to shape rather than sever the metal worked upon are classified in class 90, GEAR-CUTTING MILLING, AND PLANING, subclass 11, Milling.
- Search Class—**
143—WOOD-SAWING, and class 145, WOODWORKING-TOOLS, subclass 31, Hand-saws.
68. **SAWING, BAND SAW.** Machines in which the metal is severed by an endless saw passing over and driven by pulleys.
- Search Class—**
143—WOOD-SAWING, subclass 17, Band-saw machines, and the subclasses thereunder.
69. **SAWING, CIRCULAR SAW.** Machines and devices in which the cutter is a rotary disk.
- Search Class—**
143—WOOD-SAWING, subclass 33, Circular-saw machines, and the subclasses thereunder.
70. **SAWING, CIRCULAR SAW, MULTIPLE.** Machines having a plurality of saws, usually parallel, on the same shaft.
71. **SAWING, CIRCULAR SAW, RIM-DRIVEN.** Machines in which the saw is driven by power applied directly to the saw at or near its periphery instead of mounting the saw upon a power-driven shaft.
- Search Class—**
143—WOOD-SAWING, subclass 44, Circular-saw machines, Rim-driven.
72. **SAWING, OSCILLATING SAW.** Machines and devices in which the cutting-teeth move backward and forward in the arc of a circle. The saw itself is usually arc-shaped and its frame pivoted at the center of such arc.
- Search Class—**
143—WOOD-SAWING, subclass 69, Reciprocating-saw machines, Drag, Oscillatory.
73. **SAWING, RECIPROCATING SAW.** Machines in which a straight saw-blade, usually stretched in a suitable frame, is moved backward and forward across the work in substantially straight lines.
- Search Class—**
143—WOOD-SAWING, subclass 61, Reciprocating-saw machines, Drag, and the subclasses thereunder.
74. **SAWING, RECIPROCATING SAW, VERTICAL.** Saws mounted in suitable stretcher-frames and reciprocated in substantially vertical lines, usually through an orifice in a horizontal table.
75. **SAWING, RECIPROCATING SAW, HAND-DRIVEN.** Devices usually comprising a blade-stretcher suitably guided to permit the saw to reciprocate in substantially straight lines and having a hand-grip for manually reciprocating.
76. **FILING.** Machines and processes for filing metal, which may be defined as cutting metal by a hard instrument having its surface or surfaces sharply ridged.
77. **FILING, FILE-BLANK STRIPPERS.** Machines and processes for preparing file-blanks by filing the surfaces of the rough blanks.
- Note.**—Machines for grinding the surfaces of file-blanks are classified in class 51, GRINDING AND POLISHING, subclasses 4, Metal, Curved surfaces, and 12, Metal, Plane surfaces.
78. **FILING, FILES AND RASPS.** Hard smoothing instruments having their working surfaces sharply ridged to form cutting edges or teeth.
- Search Classes—**
128—SURGERY, subclass 27, Veterinary.
168—FARRIERY, subclass 48, Tools, Hoof cleaners and trimmers.
79. **FILING, FILES, AND RASPS, SECTIONAL.** Files or rasps built up of a plurality of members, usually serrated plates.
80. **FILING, FILES AND RASPS, HOLDERS.** Handles and devices for holding files or rasps during their use. Includes also shanks and supports carried by a handle, to which the file is secured.
- Search Classes—**
128—SURGERY, subclass 27, Veterinary.
145—WOODWORKING-TOOLS, subclass 83, Handles, Socket-fastenings.
81. **SCALE REMOVERS AND PREVENTERS.** Machines and processes for removing scale from metal sheets and bars by scraping, flexing, treating with water or steam, etc., except brushing or scouring with an abradant and removing scale by chemical action.

CLASS 29—Continued.

Note.—For brushing or scouring with an abradant see class 51, GRINDING AND POLISHING, subclass 15, Metal, Sheet metal and wire.

Search Classes—

- 91—COATING, subclass 70.3, Processes, With heat, With metal, Molten, Preparations.
- 145—ANNEALING AND TEMPERING, subclass 42, Pickling and Swilling.
- 204—ELECTROCHEMISTRY, subclass 7, Electrolysis, Aqueous bath, Cathodes, Cleaning.
- 210—WATER PURIFICATION, subclass 22, Boiler compounds, for removing scale by chemicals.
82. SHARPENING, EDGE-SERRATING. Machines, devices, and processes for serrating the metal adjacent to the edges of cutters, the serrations extending in most instances across the beveled portion of the blade and obliquely to the edge.
83. SHARPENING, SWAGING. Machines and devices for sharpening metal by forging or rolling the metal adjacent to the edge. The most of these devices are adapted to sharpen plow-points, harrow-disks, and other farming implements.
84. ASSEMBLING. Miscellaneous apparatus and processes for assembling and securing together the parts of metallic articles or those composed in part of metal.
- Search Classes—
- 72—METAL FORGING AND WELDING, subclass 49, Forging, Riveting, Machines, Special.
- 81—TOOLS, subclasses 3, Special, and 55, Wrenches, Machine, Bolt holding.
85. ASSEMBLING, AXLE, PIN, AND COLLAR PRESSES. Presses for inserting or extracting axles, pins, etc., and also presses for applying or removing collars.
- Search Class—
- 29—METAL WORKING, subclasses 85, Assembling, Staking watches and clocks; 86.1, Assembling, Pin inserters and removers, and 88.2, Assembling, Tube appliers and removers.
86. ASSEMBLING, AXLE, PIN, AND COLLAR PRESSES, FLUID OPERATED. Presses for inserting or extracting axles, pins, etc.; also presses for applying or removing collars which are actuated by fluid pressure.
- 86.1 ASSEMBLING, PIN INSERTERS AND REMOVERS. Apparatus other than presses for performing the single operation of removing pins from collars or hinges, keys from hubs or shafts, cotter-pins from cranks or cross-heads, etc., or inserting them into the same.
- Search Classes—
- 29—METAL WORKING, subclasses 85, Assembling, Axle, pin, and collar presses; 88, Assembling, Staking watches and clocks, and 88.2, Assembling, Tube appliers and removers.
- 145—WOOD WORKING TOOLS, subclasses under Nail extractors.
- 157—WHEELWRIGHT MACHINES, subclass 12, Spoke extractors.
- 86.2 ASSEMBLING, PIN INSERTERS AND REMOVERS, PLIERS. Tools having the form of pliers for inserting or removing pins, etc.
- Search Classes—
- 29—METAL WORKING, subclass 88.1 Assembling, Staking watches and clocks, Pliers.
- 81—TOOLS, subclass 8, Special, Watchmakers', Ruby-pin setters
87. ASSEMBLING, SPOKED WHEELS. Means for assembling the parts of metallic spoked wheels, including also machines for applying spoke-washers to the felly.
- Note.—Machines for securing the wheel spokes in the hub or felly by upsetting the spoke or compressing the hub or felly, are classified in class 75, METAL FORGING AND WELDING, subclass 16, Forging, Power hammers and presses, Spoke securing.
- Search Classes—
- 29—METAL WORKING, subclass 174, Blanks and processes, Spoked wheels.
- 157—WHEELWRIGHT MACHINES.
- 87.1. ASSEMBLING, SPRING APPLIERS AND REMOVERS. Apparatus for inserting or applying and removing springs, and clamps for holding springs compressed to enable ready application or removal of the spring or parts cooperating therewith.
- Search Classes—
- 29—METAL WORKING, subclass 88.2, Assembling, Tube appliers and removers.
- 81—TOOLS, subclass 3, Special.
88. ASSEMBLING, STAKING WATCHES AND CLOCKS. Apparatus for removing arbors from watch pinions or inserting arbors into watch pinions. This subclass also includes apparatus for inserting the leaves of lantern pinions.
- Search Classes—
- 29—METAL WORKING, subclasses 85, Assembling, Axle, pin, and collar presses, and 86.1, Assembling, Pin inserters and removers.
- 81—TOOLS, subclass 6, Special, Watchmakers'.
- 88.1. ASSEMBLING, STAKING WATCHES AND CLOCKS, PLIERS. Tools having the form of pliers or pincers for removing arbors from watch pinions, hands from clocks and watches, collets from balance wheels, etc., or for inserting arbors into pinions, etc.
- Search Classes—
- 29—METAL WORKING, subclass 86.2, Assembling, Pin inserters and removers, Pliers.
- 81—TOOLS, subclass 6, Special, Watchmakers'.

CLASS 29—Continued.

- 88.2. ASSEMBLING, TUBE APPLIERS AND REMOVERS. Apparatus specially adapted for inserting bushings, couplings, tubes, etc., or for applying rings, ferrules, etc., or for extracting or removing the same.
89. ASSEMBLING, WORK HOLDERS. Clamps and jigs adapted to hold the parts of metallic articles of manufacture while they are being assembled or are being operated upon by mechanisms for securing said parts; also work holders for metal parts for which there is no specific class or subclass.
- Search Classes—
- 77—BORING AND DRILLING, subclass 62, Appliances, Jigs.
- 90—GEAR CUTTING, MILLING, AND PLANING, subclass 59, Work holders.
- 113—SHEET METAL WARE, MAKING, subclass 99, Soldering, Clamps, and the subclasses thereunder.
90. BURNISHING. Machines and processes for condensing the surface of metallic articles, usually by rubbing with a smooth surface of greater hardness than that of the article being operated upon. These machines differ from grinding and polishing machines in that there is practically no abrasion of the surface treated.
91. ABOLISHED.
92. ABOLISHED.
93. ABOLISHED.
94. ABOLISHED.
95. CUTTERS. Miscellaneous cutters for metal-working machines comprising only so much of the cutting mechanism as is removably secured in the tool post or rest or supported thereon while making its cut.
96. CUTTERS, INSERTED BLADE. Devices of the same general configuration as integral cutters which are clamped in a tool-post, but having a small removable and interchangeable blade which forms the immediate stock-removing portion of the cutter.
- Search Class—
- 29—METAL WORKING, subclass 105, Cutters, Rotary, Inserted tooth.
97. CUTTERS, INSERTED BLADE, MULTIPLE. Cutters carrying a plurality of inserted cutting-blades capable of simultaneous action.
98. CUTTERS, INSERTED BLADE, ANGULAR ADJUSTMENT. Inserted blade cutters capable of angular adjustment other than mere rotation about their own axes.
99. CUTTERS, INSERTED BLADE, LATERAL OFFSET. Cutters in which the blade is located in an approximately horizontal plane and substantially transverse to the axis of the cutter-body.
100. CUTTERS, INSERTED BLADE, VERTICAL OFFSET. Inserted blade cutters in which the blade is located in an approximately vertical plane and transverse to the axis of the cutter-body.
101. CUTTERS, INSERTED BLADE, ARC. Cutters having an arc-shaped blade secured in a correspondingly-shaped recess in the cutter-body.
102. CUTTERS, PROFILED CIRCULAR BLADE. Cutters producing a pattern-surface by means of a blade circular in cross-section and of reverse pattern in axial section, whose working edge is formed by removing a portion of the circumference, leaving one face substantially radial.
- Search Class—
- 82—TURNING, subclass 13, Axial pattern, Profiled cutter.
103. CUTTERS, ROTARY. Miscellaneous rotary metal-working cutters of the type ordinarily used in milling-machines.
- Search Class—
- 12—BOOT AND SHOE MAKING, subclass 91, Sole and heel edge trimmers, Rotary cutter-heads.
104. CUTTERS, ROTARY, GANG. Form-milling cutters built up by placing several rotary cutters in axial alinement on the same driving-shaft.
105. CUTTERS, ROTARY, INSERTED TOOTH. Rotary cutters built up from a body in which are secured smaller separate cutting-teeth.
- Search Classes—
- 29—METAL WORKING, subclass 96, Cutters, Inserted blade.
- 12—BOOT AND SHOE MAKING, subclass 94, Sole and heel edge trimmers, Rotary cutter-heads, Inserted cutters.
- 143—WOOD-SAWING, subclass 145, Saw-teeth fastenings, and the subclasses thereunder.
106. CUTTERS, LUBRICATORS. Devices for supplying lubricants to cutting-tools so designed as to convey it to the working edge of the tool.
- Search Class—
- 77—BORING AND DRILLING, subclass 68, Drills, Oil-conduit.
107. MACHINE-CHUCKS AND TOOL-SOCKETS. Machine attachments and details which grip articles by means of movable jaws or which have sockets or recesses conforming substantially to the shape of the article held for the purpose of rotating

CLASS 29—Continued.

said article. This subclass contains mainly devices for metal-working, but is not confined to such, being the general class for such devices as are not specifically classified elsewhere.

Note.—Nipple-chucks and sockets for holding screw-threaded articles are classified in class 10, BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 107, Screw-threading, Machines, Work-holders, and 108, Screw-threading, Machines, Work-holders, Nipple-chucks.

Note.—Other devices structurally similar will be found in class 81, TOOLS, subclass 53, Wrenches, and the subclasses thereunder, and in subclass 17, Vises, and the subclasses thereunder.

Note.—Planing-machine and milling-machine chucks, which do not rotate the piece held, are classified in class 81, TOOLS, subclass 17, Vises, and the subclasses thereunder.

Note.—Expandable mandrels for supporting the work in lathes, etc., are in class 82, TURNING, subclass 44, Work-drivers, Mandrels, Expandable.

Note.—Tool-holders for planers are classified in class 90, GEAR-CUTTING, MILLING, AND PLANING, subclass 52, Planing, Planers, Tool-heads.

Note.—Rock-drill chucks mainly designed to reciprocate instead of rotate the tool held are in class 135, STONE-WORKING, subclass 3, Chucks for rock-drills.

Note.—Bit-sockets, handle-sockets, and analogous devices structurally similar, but intended for use in portable tools, are in class 145, WOODWORKING-TOOLS, subclass 83, Handles, Socket-fastenings, and the subclasses thereunder.

107.5 MACHINE-CHUCKS AND TOOL-SOCKETS, INDEXED WORK-GRIPS. Chucks in which the jaws carry work-grips which may be indexed about a transverse axis, so as to present the several faces of the work-piece successively to the cutting-tools.

108. MACHINE-CHUCKS AND TOOL-SOCKETS, ECCENTRIC. Chucks arranged to hold articles eccentric to their axes of rotation.

109. MACHINE-CHUCKS AND TOOL-SOCKETS, SELF-ALIGNING. Chucks in which the article rotated is free to be moved laterally or angularly into alignment or coincidence with the axis of rotation of the chuck.

110. MACHINE-CHUCKS AND TOOL-SOCKETS, TANG-END DRIVE. Tool chucks and sockets which, in addition to the ordinary holding and driving means, have devices for engaging and positively rotating the flattened end of the tool-tang.

111. MACHINE-CHUCKS AND TOOL-SOCKETS, BEVEL-CLOSING. Movable chucks in which the relative movement of the jaws and the chuck-body or of the jaws and the jaw-actuating device is along lines neither parallel nor perpendicular to the axis of the chuck.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 95, Screw-threading, Machines, Collapsing die, Bevel-closing.

112. MACHINE-CHUCKS AND TOOL-SOCKETS, BEVEL-CLOSING, ADVANCING JAW. Bevel-closing chucks in which the jaws are advanced into a beveled socket, the jaws being usually carried by a longitudinally-movable sleeve which is lever-actuated.

113. MACHINE-CHUCKS AND TOOL-SOCKETS, BEVEL-CLOSING, RECEDING JAW. Bevel-closing chucks in which the jaws are drawn back into a beveled socket, the jaws being usually carried by a longitudinally-movable sleeve which is lever-actuated.

Search Class—

79—BUTTON-MAKING.

114. MACHINE-CHUCKS AND TOOL-SOCKETS, BEVEL-CLOSING, AXIAL DRAW-SCREW. Bevel-closing chucks in which the jaws are drawn back into a beveled socket by an axially-moving screw and suitable nut.

115. MACHINE-CHUCKS AND TOOL-SOCKETS, BEVEL-CLOSING, AXIAL THRUST-SCREW. Bevel-closing chucks in which the jaws are thrust forward into a conical cap or converging grooves by an axially-moving screw meshing with a corresponding female screw in the chuck-body and having suitable connection with the jaws.

116. MACHINE-CHUCKS AND TOOL-SOCKETS, BEVEL-CLOSING, ROTATING RING. Bevel-closing chucks in which the jaws are actuated by interiorly-threaded rings which rotate, but have no relative longitudinal movement.

117. MACHINE-CHUCKS AND TOOL-SOCKETS, BEVEL-CLOSING, ROTATING RING, ADVANCING JAW. Chucks like the preceding in which the rotation of the threaded ring moves the gripping-jaws forward in converging guides.

118. MACHINE-CHUCKS AND TOOL-SOCKETS, BEVEL-CLOSING, SCREW-CAP. Bevel-closing chucks in which the jaws are given their converging movement by a cap which screws upon the end of the chuck-body.

Search Class—

145—WOODWORKING-TOOLS, subclass 92, Handles, Socket-fastenings, Bevel-closing, Screw-cap for analogous structures.

119. MACHINE-CHUCKS AND TOOL-SOCKETS, BEVEL-CLOSING, SCREW-CAP, CONICAL. Chucks like the preceding in which the jaws are drawn together by the axial movement of an internally-coned screw-cap.

CLASS 29—Continued.

120. MACHINE-CHUCKS AND TOOL-SOCKETS, BEVEL-CLOSING, SCREW-RING. Bevel-closing chucks in which the jaws are given their converging movement by a screw-ring laterally surrounding and moving longitudinally on the body of the chuck.

Search Class—

145—WOODWORKING-TOOLS, subclass 89, Handles, Socket-fastenings, Bevel-closing, Screw-ring.

121. MACHINE-CHUCKS AND TOOL-SOCKETS, BEVEL-CLOSING, SCREW-RING, ADVANCING JAW. Chucks like the preceding in which the threaded closing ring imparts to the jaws its own relative longitudinal movement of advance with reference to the chuck-body.

122. MACHINE-CHUCKS AND TOOL-SOCKETS, BEVEL-CLOSING, SCREW-RING, RECEDING JAW. Chucks like the preceding except that the closing movement of the jaw is in the opposite direction axially.

123. MACHINE-CHUCKS AND TOOL-SOCKETS, BEVEL-CLOSING, SLIDING RING. Chucks in which the jaws are actuated by a connected ring or sleeve which merely slides longitudinally on the chuck-body.

Search Class—

145—WOODWORKING-TOOLS, subclass 94, Handles, Socket-fastenings, Bevel-closing, Sliding-ring.

124. MACHINE-CHUCKS AND TOOL-SOCKETS, CAM-CLOSING. Chucks in which the jaws are operated by a rotating cam-surface.

Search Classes—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 96, Screw-threading, Machines, Collapsing die, Cam-closing.

82—TURNING, subclass 42, Work-drivers, Lathe-dogs, Cam-grip.

145—WOODWORKING-TOOLS, subclass 96, Handles, Socket-fastenings, Cam-closing.

125. MACHINE-CHUCKS AND TOOL-SOCKETS, CAM-CLOSING, WORM AND WORM-WHEEL. Chucks in which the jaw-operating cam has an attached worm-wheel rotated by a transversely-located worm.

126. MACHINE-CHUCKS AND TOOL-SOCKETS, CAM-CLOSING, SCROLL. Chucks in which the jaw-operating cams are of considerable length and slight pitch, necessitating a rotation through a large angle to close the jaws. The cam-surfaces are usually flat spirals located on the face of the rotating member.

127. MACHINE-CHUCKS AND TOOL-SOCKETS, BEVEL-CLOSING, SCROLL, BEVEL PINION AND RING. Chucks like the preceding in which the jaw-driving scroll is rotated by a beveled gear-ring which meshes with one or more bevel-pinions having wrench-holds.

128. MACHINE-CHUCKS AND TOOL-SOCKETS, BEVEL-CLOSING, SCROLL, CONICAL. Scroll-chucks in which the jaw-operating scroll is arranged on the surface of a rotating cone.

129. MACHINE-CHUCKS AND TOOL-SOCKETS, LEVER-CLOSING. Chucks in which the jaw movements are effected by levers.

Search Classes—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 97, Screw-threading, Machines, Collapsing die, Lever-closing.

145—WOODWORKING-TOOLS, subclass 98, Handles, Socket-fastenings, Lever-closing.

130. MACHINE-CHUCKS AND TOOL-SOCKETS, LEVER-CLOSING, CONE. Chucks like the preceding in which the jaw-actuating levers are oscillated by cones moving under their free ends.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 98, Screw-threading, Machines, Collapsing die, Lever-closing, Cone.

131. MACHINE-CHUCKS AND TOOL-SOCKETS, LEVER-CLOSING, TOGGLE. Chucks in which the jaw-closing levers have or are capable of having a toggle or locking action.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 16, Bolt and rivet making, Reciprocating die and header, Toggle-closing dies; 50, Nail-making, Wire nails, Reciprocating die and header, Toggle-closing dies, and 99, Screw-threading, Machines, Collapsing die, Lever-closing, Toggle.

132. MACHINE-CHUCKS AND TOOL-SOCKETS, TRANSVERSE SCREW-CLOSING. Chucks in which the jaws are operated or the article is gripped by screws lying in a plane substantially perpendicular to the axis of the chuck.

Search Class—

145—WOODWORKING-TOOLS, subclass 99, Handles, Socket-fastenings, Transverse screw-clamp.

133. MACHINE-CHUCKS AND TOOL-SOCKETS, TRANSVERSE SCREW-CLOSING, RADIAL-SCREW JAW. Chucks in which a plurality of jaws are moved in radial lines by intermeshing radial screws.

134. MACHINE-CHUCKS AND TOOL-SOCKETS, TRANSVERSE SCREW-CLOSING, RADIAL-SCREW JAW, BEVEL PINION AND RING. Chucks in which the radially-arranged jaw-driving screws are simultaneously rotated by a rotating bevel-gear ring which meshes with a pinion secured to each screw.

CLASS 29—Continued.

135. **MACHINE-CHUCKS AND TOOL-SOCKETS, TRANSVERSE SCREW-CLOSING, OPPOSITE COUPLED JAWS.** Chucks in which a pair of radially-opposed jaws are coupled together and operated by a screw or screws, usually right and left threaded.
136. **ABOLISHED.** See subclass 107.5.
137. **MACHINE-CHUCKS AND TOOL-SOCKETS, TRANSVERSE SCREW-CLOSING, OPPOSITE COUPLED JAWS, INTERLOCKING.** Chucks with screw-coupled paired jaws transversely divided into sections which pass the center line of the chuck and enter corresponding recesses in the opposite jaw.
138. **MACHINE-CHUCKS AND TOOL-SOCKETS, TRANSVERSE WEDGED JAW.** Chucks in which the jaws are moved in lines perpendicular to the axis of the chuck by means of backing-wedges operated in various ways.
- Search Class—**
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 51, Nail-making, Wire nails, Reciprocating die and header, Wedge-closing dies; and 17, Bolt and rivet making, Reciprocating die and header, Wedge-closing dies.
139. **MACHINE-CHUCKS AND TOOL-SOCKETS, LONGITUDINAL SCREW-CLAMP.** Chucks in which the article is secured to the rotating chuck-body by clamping-screws arranged parallel to the axis of rotation.
140. **MACHINE-CHUCKS AND TOOL-SOCKETS, TRANSVERSELY-OSCILLATING JAW.** Chucks in which the gripping-jaws converge in curved paths in a plane substantially perpendicular to the axis of the chuck.
141. **MACHINE-CHUCKS AND TOOL-SOCKETS, SOCKETS.** Devices mainly for rotating tools which have rigid recesses conforming substantially to the shank of the tool or shape of the article held.
- Search Class—**
142—WOOD-TURNING, subclass 57, Work-holders, Socket.
142. **MACHINE-CHUCKS AND TOOL-SOCKETS, SOCKETS, MULTIPLE.** Devices having a series of recesses of varying size which may be successively brought into alignment with the axis of the holder.
143. **MACHINE-CHUCKS AND TOOL-SOCKETS, SOCKETS, WEDGE.** Sockets which have a movable contained piece capable of being forced into firm engagement with the article held to prevent its disengagement.
144. **MACHINE-CHUCKS AND TOOL-SOCKETS, SOCKETS, SPLIT.** Sockets composed of a single piece, but having a longitudinal dividing slot or slots, so as to be contracted by outside gripping devices.
- Search Class—**
145—WOODWORKING-TOOLS, subclass 101, Handles, Socket-fastenings, Transverse screw-clamp, Split socket.
145. **MACHINE-CHUCKS AND TOOL-SOCKETS, SOCKETS, DETENT.** Sockets having a movable contained piece which loosely engages the article held to prevent its rotation or disengagement.
146. **MACHINE-CHUCKS AND TOOL-SOCKETS, INDICATORS.** Devices attached to chuck bodies or jaws to indicate the amount of opening of the jaws, the amount of eccentricity, etc.
147. **MACHINE-CHUCKS AND TOOL-SOCKETS, JAWS.** The immediate movable gripping-pieces of the chuck.
148. **BLANKS AND PROCESSES.** Blanks and processes for making special metallic articles not indicated by the following specific subclass titles, and also processes for working metal not classifiable in specific art classes.
- Note.**—Processes for casting metal articles are in class 22, METAL-FOUNDING.
Blanks and processes for making tools are classified in class 76, METAL TOOLS AND IMPLEMENTS, MAKING.
Processes for forging and welding are classified in class 78, METAL FORGING AND WELDING.
Processes for making special articles from sheet metal by the operations peculiar to sheet-metal working are classified in class 113, SHEET-METAL WARE, MAKING, subclasses 51, Die-shaping, Processes, and 116, Processes.
149. **BLANKS AND PROCESSES, BEAMS AND RAILS, MECHANICALLY CAPPED.** Processes for capping rails and beams by mechanically uniting the parts, usually by dovetailed joints.
- Search Class—**
23—METAL-WORKING, subclasses under Metal stock, Processes, for capping by welding.
150. **BLANKS AND PROCESSES, BRACES AND BRACKETS.** Blanks and processes for forming iron braces and brackets by swaging, die-forming, bending, etc.
151. **BLANKS AND PROCESSES, BRIDGE-IRONS.** Blanks and processes for forming eyebars, links, or other tension or compression members for bridge-irons.
152. **BLANKS AND PROCESSES, CARRIAGE-IRONS.** Miscellaneous blanks and processes for forming special irons used in the manufacture of carriages and wagons, including steps, clips, etc.

CLASS 29—Continued.

153. **BLANKS AND PROCESSES, CARRIAGE - IRONS, AXLES.** Blanks and processes for forming metallic axles for carriages, wagons, etc.
- Search Class—**
29—METAL-WORKING, subclass 165, Blanks and processes, Railway-car irons, Axles.
154. **BLANKS AND PROCESSES, CARRIAGE - IRONS, AXLE BOXES AND SKEINS.** Blanks and processes for making axle-boxes for vehicle-hubs or axle-skins adapted to be applied to wooden vehicle-axles.
- Search Class—**
29—METAL-WORKING, subclass 166, Blanks and processes, Railway-car irons, Axle-boxes.
155. **BLANKS AND PROCESSES, COLUMNS AND GIRDERS.** Blanks and processes for forming or mechanically treating, as by compression, etc., columns, beams, girders, etc., used in structural work.
156. **BLANKS AND PROCESSES, FERRULES, RINGS, AND THIMBLES.** Blanks and processes for forming ferrules, rings, including packing-rings, thread-protecting rings, pipe-couplings, etc., formed by forging, swaging, rolling, etc.
- Note.**—Forming rings, etc., from thin sheet metal which involves merely operations common to sheet-metal work, such as die-shaping, bending, soldering, etc., are classified in class 113, SHEET-METAL WARE, MAKING.
- Search Class—**
29—METAL-WORKING, subclass 8, Special work, Finger-ring forming and sizing.
157. **BLANKS AND PROCESSES, GAS AND WATER FITTINGS.** Blanks and processes for forming various fittings and devices used in gas, steam, and water distributing apparatus, including elbows, T's, and other pipe connections, screw-couplings, valves, plumbers' tacks, etc.
158. **BLANKS AND PROCESSES, GAS AND WATER FITTINGS, TRAPS.** Blanks and processes for forming (and assembling) traps and trap-chambers used in water or gas distribution.
159. **BLANKS AND PROCESSES, GEARS, PULLEYS, TIRES, AND WHEELS.** Blanks and processes for forming the various articles above enumerated, excepting such articles having spokes formed independently of the hub or rim, and railway car wheels.
- Search Class—**
29—METAL-WORKING, subclasses 174, Blanks and processes, Spoked wheels, and 168, Blanks and processes, Railway-car irons, Wheels.
160. **BLANKS AND PROCESSES, GRILLES.** Blanks and processes for making metallic grilles.
161. **BLANKS AND PROCESSES, KNOBS AND KNOB-SHANKS.** Blanks and processes for manufacturing metallic knobs (usually door-knobs) and shanks to which knobs are secured.
162. **BLANKS AND PROCESSES, LINED PIPES AND TANKS.** Blanks and processes for applying or securing a sheet-metal lining to pipes, reservoirs, tanks, etc.
- Note.**—This subclass does not include coating with fluid metal, which is in class 91, COATING.
163. **BLANKS AND PROCESSES, MUSICAL VIBRATORS.** Blanks and processes for forming metallic vibrating devices adapted to produce musical tones, such as organ-reeds, tuning-forks, etc.
164. **BLANKS AND PROCESSES, RAILWAY-CAR IRONS.** Miscellaneous blanks and processes for making irons for railway rolling-stock not included in the following subclasses.
165. **BLANKS AND PROCESSES, RAILWAY-CAR IRONS, AXLES.** Blanks and processes for making axles for railway rolling-stock.
- Search Class—**
29—METAL-WORKING, subclass 153, Blanks and processes, Carriage-irons, Axles.
166. **BLANKS AND PROCESSES, RAILWAY-CAR IRONS, AXLE-BOXES.** Blanks and processes for making axle-boxes for railway rolling-stock.
- Search Class—**
29—METAL-WORKING, subclass 154, Blanks and processes, Carriage-irons, Axle boxes and skains.
167. **BLANKS AND PROCESSES, RAILWAY-CAR IRONS, COUPLINGS AND DRAW-BARS.** Blanks and processes for making car-couplings, including links, and draw-bars.
168. **BLANKS AND PROCESSES, RAILWAY-CAR IRONS, WHEELS.** Blanks and processes for making car-wheels where there is some further function performed than mere casting or forging or rolling.
169. **BLANKS AND PROCESSES, RAILWAY - TRACK IRONS.** Blanks and processes for forming track-irons for railways, including rails, rail-braces, ties, bonds, etc.
- Note.**—Railway-chairs are classified in this class, subclass 16, Special work, Railway-chair making.
170. **BLANKS AND PROCESSES, SPINNERS' AND WEAVERS' IRONS.** Blanks and processes for making the various iron parts used in looms, spinning-machines, carding-machines, etc., except spinning-rings.

CLASS 22—Continued.

171. **BLANKS AND PROCESSES, SPINNERS' AND WEAVERS' IRONS, SPINNING-RINGS.** Blanks and processes for forming or repairing spinning-rings.
172. **BLANKS AND PROCESSES, SPRING-HEAD CLIPS.** Blanks and processes for making clips for carriage-spring heads, spring-clips for railway rolling-stock, etc.
173. **BLANKS AND PROCESSES, SPRINGS.** Blanks and processes for making springs, including leaf, plate, spiral, etc., in which other operations are performed than mere bending or coiling or tempering.
174. **BLANKS AND PROCESSES, SPOKED WHEELS.** Blanks for forming wheels having spokes formed independently of the hub or rim, also processes for forming such wheels, including processes for securing the ends of the spokes to the hub-rim, for tensioning the spokes, and for truing the wheel.
Note.—This subclass does not include processes for casting wheels on hubs or in rims which are classified in class 105, RAILWAY ROLLING-STOCK, subclass 140, Wheel-bodies, Cast in tires, and 141, Wheel-bodies, Cast on hubs.
Search Class—
 22—METAL-FOUNDING, subclasses under Processes, Casting, Composite article, for uniting parts by casting metal generally.
175. **BLANKS AND PROCESSES, TURNBUCKLES.** Blanks and processes for forming turnbuckles and for securing the tensioning members to said turnbuckles.
176. **BLANKS AND PROCESSES, VELOCIPEDE-IRONS.** Blanks and processes for making the metallic parts of the velocipedes, such as forks, pedals, cranks, frames, etc.
177. **BLANKS AND PROCESSES, WATCHES AND CLOCKS.** Miscellaneous blanks and processes for making parts of watches and clocks not included in the following subclasses.
178. **BLANKS AND PROCESSES, WATCHES AND CLOCKS, ARBORS, PINIONS, AND BALANCES.** Blanks and processes for making arbors, pinions (including lantern-wheels), and balances for watches and clocks.
179. **BLANKS AND PROCESSES, WATCHES AND CLOCKS, CASES, CROWNS, AND PENDANTS.** Blanks and processes for forming watchcases, crowns, and pendants which includes other steps than mere die-shaping.
Note.—Machines for merely die-shaping the sheet metal are classified in class 113, SHEET-METAL WARE, MAKING, subclass 38, Die-shaping.
 Machines for die-shaping the centers of watchcases are classified in class 113, SHEET-METAL WARE, MAKING, subclass 47, Die-shaping, Roller and concave.
 Machines for ornamenting watchcases are classified in class 201, METAL-ORNAMENTING, subclasses 2, Nurling, and 3, Die-pressing.
180. **METAL STOCK.** Metal bars, plates, tubes, etc., generally formed of a single metal, which are adapted to be sold as articles of manufacture.
Note.—Blanks which are adapted to be formed into special articles are classified in this class under Blanks and processes.
Search Class—
 189—METALLIC BUILDING STRUCTURES, for metal girders, beams, and columns.

CLASS 29—Continued.

181. **METAL STOCK, COMPOUND.** Metal plates, etc., which are made by joining two or more different metals.
182. **METAL STOCK, COMPOUND, BARS AND TUBES.** Bars and tubes made by joining two or more different metals.
183. **METAL STOCK, PILES AND FAGOTS, PARALLEL BARS.** Assemblages of bars or plates arranged in parallelism which are adapted to be heated and rolled or forged into bars, beams, railroad-rails, etc.
184. **METAL STOCK, PILES AND FAGOTS, PARALLEL BARS, RAILROAD-RAILS.** Piles and fagots comprising railroad-rails arranged in parallelism with or without a filling of muck-iron or the like, which are adapted to be rolled into bars, beams, or railroad-rails. The patents in this subclass are mainly for utilization of old railroad-rails.
185. **METAL STOCK, PILES AND FAGOTS, TUBULAR.** Piles made from bars, plates, etc., arranged about a non-metallic core or in the form of a tube adapted to be heated and rolled or forged into a tube or a hollow beam.
186. **METAL STOCK, PILES AND FAGOTS, BOX AND SCRAP.** Piles comprising a box-like structure formed of plates or bars the interior of which is filled with iron-scrap.
187. **METAL STOCK, TUBE AND PLATE, INTERLOCKED JOINT.** Tubes, plates, etc., whose edges or surfaces are united by dovetailed or other interlocked joints. These tubes are generally intended for structural work, such as bicycle-frames, bedsteads, etc.
188. **METAL STOCK, PROCESSES, COMPOUND BARS AND TUBES.** Processes for making bars or tubes comprising two or more metals or forms of the same metal united by welding, soldering, or other molecular adhesion.
Note.—This subclass does not include casting *per se*, nor coating with fluid metal, nor by chemical or electro deposition of one of the metals.
Note.—Methods of covering wire with sheet metal closed upon the wire core by drawing are classified in class 205, METAL-DRAWING, subclass 18, Wire, Covering, Processes.
189. **METAL STOCK, PROCESSES, COMPOUND PLATE.** Processes for making metal plates or sheets comprising two or more metals or forms of the same metals united by welding, soldering, or other molecular adhesion.
Note.—This subclass does not include processes for forming compound ingots by casting unless such process includes further steps of forging, rolling, or the like; nor coating with fluid metal which is poured upon the surface of the basic plate or into which such plate is dipped; nor electric or chemical deposition of one of the metals.
Search Classes—
 29—METAL-WORKING, subclasses 18, Special work, Sheet-metal and foil manufacture, Processes, and 181, Metal stock, Compound.
 22—METAL-FOUNDING, subclasses 201, Processes, Casting, Composite article, for processes of making composite articles by casting one metal upon another fluid metal or casting both in contact with each other; 204, Processes, Casting, Composite article, One metal solid, Heated, for processes of casting one metal upon another metal which is in a solid state; and 207, Processes, Casting, Composite article, One metal solid, Iron and steel, Compression.
 78—METAL FORGING AND WELDING, subclass 93, Welding, Processes, Dissimilar metals.

CLASS 36.—BOOTS, SHOES, AND LEGGINGS.

DEFINITIONS.

Class.

This class includes miscellaneous footwear, such as boots, shoes, and leggings and accessories peculiar to them.

Subclasses.

1. MISCELLANEOUS. Miscellaneous footwear and such details as do not fall in other classes and subclasses.
2. LEGGINGS AND GAITERS. Ordinary leggings and gaiters which are worn outside or above the boot or shoe.
Note.—Such knit leggings as differ from stockings only in that they lack footpieces are found in subclass Nether garments, Stockings, class 2, APPAREL.
3. VENTILATED. All modifications of the boot or shoe and its parts to ventilate or drain it.
4. RUBBER. Boots and shoes the upper at least of which is made from rubber or fabric impregnated with rubber.
5. RUBBER, OVERSHOES. Rubber shoes adapted to be worn over other boots or shoes and to protect at least part of the upper.
6. RUBBER, OVERSHOES, HEELLESS. Rubber overshoes made to protect only the ball of the foot or provided with an opening through which the heel of the undershoe projects.
7. RUBBER, OVERSHOES, RETAINERS. Devices to be attached to and modifications of the overshoe to hold the overshoe on. Does not include buckles, clasps, and the like.
8. RUBBER, OVERSHOES, RETAINERS, HEEL-ENGAGING. The retaining device engages with the heel of the undershoe.
9. FELT AND FABRIC. Boots and shoes of which the upper at least is made of felt, cloth, or other fabric except rubber.
10. INSIDE SLIPPERS. Slippers of thin material to be worn inside of a boot or shoe to protect the stocking. Generally used with rubber boots.
11. MOCCASINS. Boots and shoes made from soft leather, the piece forming the sole being extended to form part or all of the upper.
12. SOLE-ATTACHING MEANS. Boots and shoes in which the novelty lies in the means for securing the sole to the upper or the arrangement of the parts for that purpose.
13. SOLE-ATTACHING MEANS, WOODEN SOLES. Fastenings peculiar to wooden soles.
14. SOLE-ATTACHING MEANS, RUBBER. The upper or sole or both are rubber and are secured together by means essentially peculiar to such material, usually by vulcanization.
15. SOLE-ATTACHING MEANS, DETACHABLE SOLES. The outer tread-sole of the shoe is provided with devices whereby it may be readily attached to and detached from the shoe.
Search Class—
36—BOOTS, SHOES, AND LEGGINGS, subclass 13, Sole-attaching means, Wooden soles.
16. SOLE-ATTACHING MEANS, OUTTURNED UPPERS. The bottom of the upper is turned outward to form a flange which is secured to the outer sole.
17. SOLE-ATTACHING MEANS, WELT-CONECTED. The upper is secured to the welt and usually to the insole, the welt in turn being secured to the outer sole.
Search Class—
36—BOOTS, SHOES, AND LEGGINGS, subclass 16, Sole-attaching means, Outturned uppers.
18. SOLE-ATTACHING MEANS, SINGLE-FACED STITCH. The stitch which secures the parts together does not go through the body of the sole, but goes in and out on the same side.
Search Class—
36—BOOTS, SHOES, AND LEGGINGS, subclass 17, Sole-attaching means, Welt-connected.
19. SOLE-ATTACHING MEANS, THROUGH-AND-THROUGH. The pegs or stitches pass directly through the sole, through the upper, and generally through the insole, if there be one.
20. SOLE-ATTACHING MEANS, PROCESSES. Such methods for securing soles to uppers as by their steps merely define the structure of the article.

CLASS 36—Continued.

21. SOLE-ATTACHING MEANS, SEAMS. The arrangement of the pegs or threads to form the seam which secures the upper to the sole.
22. SOLE-ATTACHING MEANS, PREPARED SOLES. Sole-blanks prepared for attachment by channeling, ribbing, or the like.
Search Class—
36—BOOTS, SHOES, AND LEGGINGS, subclasses 16, Sole-attaching means, Outturned uppers, 19, Through-and-through, 17, Welt-connected, and 18, Single-faced stitch.
23. SOLE-ATTACHING MEANS, FASTENERS. Fasteners for securing soles and uppers together.
Note.—Threads for this purpose are found in class 28, CORDAGE. Nails and tacks for this purpose are found in class 85, NAILS AND SPIKES.
24. SOLE-ATTACHING MEANS, FASTENERS, PEGS. Pegs and peg-ribbons from which pegs are cut.
Note.—Strips or carriers in which the pegs are mounted are found in class 1, NAILING AND STAPLING.
25. SOLES. This subclass includes such structures of soles as are not herein more specifically classified.
26. SOLES, FLEECE SLIPPER. Soles lined with fleece to be used in the ordinary house-slipper with knit uppers.
27. SOLES, SPRING-HEEL. One piece of material covers the whole shoe-bottom, being "sprung" to form the heel elevation.
28. SOLES, CUSHION. The sole is made yielding or has a spring attachment to cushion the foot in walking.
Search Class—
36—BOOTS, SHOES, AND LEGGINGS, subclasses 44, Soles, Insoles, Laminated, and 3, Ventilated.
29. SOLES, CUSHION, PNEUMATIC. The cushioning device is a pneumatic pad.
Search Class—
36—BOOTS, SHOES, AND LEGGINGS, subclass 3, Ventilated.
30. SOLES, LAMINATED. The sole is made up of several layers, and the novelty lies in the material used or the arrangement of the layers or the means of securing the layers together to make a sole-blank.
Search Classes—
36—BOOTS, SHOES, AND LEGGINGS, subclass 26, Soles, Fleece slipper.
174—ELECTRICITY, MEDICAL AND SURGICAL, subclass 174, Electric soles.
31. SOLES, SECTIONAL. The sole-blank is made up of several pieces joined edge to edge and no one of them big enough to cover the sole.
32. SOLES, RUBBER. The outer tread-sole is made of rubber.
Search Class—
36—BOOTS, SHOES, AND LEGGINGS, subclasses 12, Sole-attaching means, Rubber, and 36, Soles, Laminated.
33. SOLES, WOODEN. The main outer sole is made of wood.
Search Class—
36—BOOTS, SHOES, AND LEGGINGS, subclass 13, Sole-attaching means, Wooden soles.
34. HEELS. This class includes the ordinary external heel and the means for attaching it to the sole.
35. HEELS, CUSHION. The heel is made of yielding material or has a cushion or spring attached to protect the foot from jar in walking.
Search Class—
36—BOOTS, SHOES, AND LEGGINGS, subclass 3, Ventilated.
36. HEELS, CUSHION, DETACHABLE. The cushion-heel or part of it may be detached for replacement or the like.
37. HEELS, CUSHION, INTERNAL-CUSHION. A recess is formed in a rigid heel in which a spring or cushion is mounted, on which the foot rests. This subclass also includes yielding heel-pads to be inserted in the shoe.
38. HEELS, CUSHION, METALLIC-SPRING. The heel-body is a metallic spring, or an external metal spring is attached to it.
Search Class—
36—BOOTS, SHOES, AND LEGGINGS, subclass 37, Heels, Cushion, Internal cushion.
39. HEELS, ROTARY. The heel is made in two parts, one of which is a circular disk and rotatably connected to the other, so that by shifting the disk it will wear evenly.

CLASS 36—Continued.

40. **HEELS, METALLIC-SHELL.** A metal shell forms the heel, which is sometimes filled by a plug or core.
41. **HEELS, METALLIC-SHELL, DETACHABLE.** The metal-shell heel is made readily detachable.
42. **HEELS, DETACHABLE.** The heel or part of it is made readily detachable.

Search Class—

36—BOOTS, SHOES, AND LEGGINGS, subclasses 36, Heels, Cushion, Detachable, 39, Heels, Rotary, and 41, Heels, Metallic-shell, Detachable.

43. **SOLES, INSOLES.** Includes both fixed and removable insoles and heel-pads.
 Note.—Where the novelty lies in the channelling or other arrangement for securing to the upper, see subclass 22, Sole-attaching means, Prepared soles, this class.
44. **SOLES, INSOLES, LAMINATED.** The insole is formed of several layers of material.
45. **UPPERS.** The novelty lies in the part forming the upper of the boot or shoe as distinguished from the sole and heel. Modifications of the upper to facilitate lasting are also found here.
46. **UPPERS, CORDED.** The upper is prepared for lasting by threading a puckering-cord around its sole edge.
47. **UPPERS, BLANKS.** The novelty lies in the arrangement and shape of the part or parts which make the upper.
 Note.—Modifications of the top to allow the insertion and withdrawal of the foot are found in subclass 50, Uppers, Closures, this class.
48. **UPPERS, BLANKS, INTEGRAL VAMP AND QUARTERS.** A single piece of material forms the vamp and quarters or counters of the boot or shoe.
49. **UPPERS, BLANKS, INTEGRAL VAMP AND QUARTERS, SEAMLESS.** A single piece of material is crimped or split so that it forms an endless vamp and quarters.
50. **UPPERS, CLOSURES.** The arrangement of the shoe-upper to permit of its opening and closing to allow the foot to be inserted or withdrawn.
51. **UPPERS, CLOSURES, ELASTIC.** The closure is effected through the elasticity of the parts forming the top or part of the top of the shoe.
52. **UPPERS, CLOSURES, BUTTONHOLE-PIECES.** The structure of the buttonhole-pieces; mostly stays to prevent the material from tearing at the buttonhole.
53. **UPPERS, CLOSURES, SLIT STAYS.** Bars, tacks, and other stays to be placed at the lower end of the closure-slit to prevent the material from tearing.
54. **UPPERS, CLOSURES, TONGUE-PIECES.** The ordinary tongue which bridges the closure-slit. Some devices for attaching the upper end of the tongue to the lacing to hold it in position are also found here.
55. **UPPERS, LININGS.** The structure and arrangement of the upper-linings.
56. **UPPERS, PULLS.** Boot-straps and other devices attached to the boot or shoe to be grasped in pulling the boot or shoe on.
57. **UPPERS, SEAMS, STAYS, AND PIPINGS.** This class includes the arrangement of parts to form an upper seam or to stay it and the pipings to stiffen and protect the edge of the upper.
58. **UPPERS, METALLIC SEAM-STIFFENERS.** A metal rod, strip or spring is laid in the upper seam to stiffen it.
59. **ANTISLIPPING DEVICES.** The sole or heel or both of a boot or shoe are modified or an attachment is secured thereto to prevent slipping.
60. **ANTISLIPPING DEVICES, POLE-CLIMBERS.** Spurred-attachments secured to the foot or leg to facilitate the climbing of poles or trees.
Search Class—
 227—FIRE ESCAPES, subclass 8, Climbers.
61. **ANTISLIPPING DEVICES, DISENGAGING.** Antislipping devices so arranged that without removal from the boot or shoe the spur-points can be thrown into or out of position to engage the surface walked on.

CLASS 36—Continued.

62. **ANTISLIPPING DEVICES, DETACHABLE.** Antislipping device designed to be readily attached to and removed from the boot or shoe at the pleasure of the wearer.
63. **ANTISLIPPING DEVICES, DETACHABLE, SANDALS.** Detachable antislipping device provided with friction-surfaces under both the ball and heel of the foot.
64. **ANTISLIPPING DEVICES, DETACHABLE, CLAMPING.** Detachable antislipping device secured to the boot or shoe by a positive clamping mechanism.
65. **ANTISLIPPING DEVICES, DETACHABLE, CLAMPING, SCREW.** Detachable antislipping device secured to the boot or shoe by a screw-operated clamp.
Search Class—
 36—BOOTS, SHOES, AND LEGGINGS, subclass 61, Antislipping devices, Disengaging.
66. **ANTISLIPPING DEVICES, DETACHABLE, ATTACHED FASTENERS.** Detachable antislipping device secured to the boot or shoe by means of a nut, slotted locking-plate, or the like, which is permanently attached to the shoe.
67. **ANTISLIPPING DEVICES, CALKS.** A calk consisting of a spur-point and a shank forms the antislipping device, the shank being permanently inserted in the sole or heel.
68. **COUNTER-STIFFENERS.** The structure and arrangement of counter-stiffeners.
69. **COUNTER AND HEEL SUPPORTS.** Braces or supports, generally metal, attached to the boot or shoe to stiffen the counter and heel so that they will not run over.
70. **GARMENT-PROTECTORS.** Attachments, such as hooks or shields, to be attached to the boot or shoe to hold the pantaloons or skirt out of contact with the ground, or at least to prevent it rubbing against the shoe.
71. **PADS AND FOOT-SUPPORTERS.** Pads to be worn inside the shoe and such stays as are built into the boot or shoe to support the foot or ankle.
 Note.—Ankle supports or braces made independent from the boot or shoe are found in subclass Fracture apparatus of class 3, ARTIFICIAL LIMBS.
72. **PROTECTORS.** Devices to be placed on boots and shoes to protect the boot or shoe during the process of manufacturing or when in service. The protector may be permanently attached to the shoe or detachably connected.
73. **PROTECTORS, SOLE AND HEEL.** Plates, studs, and the like to be secured to and protect soles and heels from heat, moisture, or wear.
 Note.—Protectors provided with spur-points or other friction devices are found in class 36, BOOTS, SHOES, AND LEGGINGS, subclass 59, Antislipping devices.
Search Class—
 36—BOOTS, SHOES, AND LEGGINGS, subclass 69, Counter and heel supports.
74. **PROTECTORS, SOLE AND HEEL, SPUR-ATTACHED.** The protector consists of a plate or head provided with one or more spurs or projections and is secured in place by driving the spurs into the sole or heel from the outside.
75. **PROTECTORS, SOLE AND HEEL, EMBEDDED.** Protectors wholly or partly embedded in the sole or heel, usually during the making of the shoe.
Search Class—
 36—BOOTS, SHOES, AND LEGGINGS, subclass 73, Protectors, Sole and heel, Spur-attached.
76. **SHANKS.** Stiffening-pieces inserted in the shank or waist of the shoe to preserve the arch of the sole.
77. **TOE CAPS AND TIPS.** Box-toe stiffeners, also tips and caps designed to protect the toe of the upper which are permanently attached to the shoe and form a part thereof.
78. **WELTS AND RANDS.** Welts used in connecting the sole and upper and the beveled pieces used in building up the heel.
Search Class—
 36—BOOTS, SHOES, AND LEGGINGS, subclass 17, Sole-attaching means, Welt-connected.

CLASS 40.—CARD, PICTURE, AND SIGN EXHIBITING**DEFINITIONS.***Class.*

This class includes means for displaying information by printed or painted cards, calendars, pictures, labels, tags, or signs. Picture-frames and stands for supporting pictures are also included. Albums are included in subclasses Changeable exhibitors, Hinged leaves; Changeable exhibitors, Pivoted plates, and in Picture-frames, Mats, mounts, and backs, Pocketed. Such station-indicators as change the reading matter displayed are included under the several subclasses of Changeable exhibitors.

This class does not (except in Checks, labels, and tags, Changeable-reading, and in Calendars) include such devices as select or point out one or more of several inscriptions, characters, or legends by means of a movable pointer. Such are found in class 116, SIGNALS, Indicators. Nor does it include devices for displaying articles of merchandise; such are in class 211, STORE FURNITURE.

Subclasses.

1. EXHIBITORS. Miscellaneous devices for continuously or temporarily displaying cards, pictures, maps, and signs which are not properly classifiable in any of the following subclasses:

- 1.5. BADGES. Devices for attachment to the clothing, designed to display information.

Search Class—

63—JEWELRY, subclass 20, Ornamental pins, for purely ornamental devices to be attached to the clothing.

- 1.6. BADGES, CHANGEABLE READING. Badges in which the information displayed may be changed.

Search Class—

63—JEWELRY, subclasses 18, Locketts, and 19, Locketts, Hinged covers, for personal wear ornaments adapted to carry a concealed picture.

2. CHECKS, LABELS, AND TAGS. Checks, labels, and tags of a miscellaneous character designed to be attached to merchandise for the purpose of conveying some definite information concerning such merchandise.

3. CHECKS, LABELS, AND TAGS, ANIMAL-MARKERS. Identification devices designed to be attached to animals.

4. CHECKS, LABELS, AND TAGS, BOTTLE. Labels and tags specially designed and constructed for use in connection with bottles and which are not capable of general use in connection with other articles of merchandise.

5. CHECKS, LABELS, AND TAGS, CHANGEABLE READING. Devices designed for attachment to articles of merchandise, in which one or more of several legends are exposed for display for such time as desired and afterwards changed at will or in which one or more of several legends which are constantly displayed may be indicated as the ones disclosing the particular information to be imparted.

Search Class—

116—SIGNALS, subclass 31, Indicators.

6. CHECKS, LABELS, AND TAGS, CHANGEABLE-READING, BAGGAGE-CHECKS. Devices for temporary attachment to baggage for identification purposes or to designate the destination of the baggage, or for both purposes.

7. CHECKS, LABELS, AND TAGS, DISPLAY-BOX LABELS. Labels or tags which are permanently attached to display-boxes. They are usually attached to project from the inside of the box and are capable of being folded down out of the way of the lid of the box when it is closed.

Search Class—

217—WOODEN RECEPTACLES, subclass 60, Boxes, Closures, Hinged, Supports.

8. CHECKS, LABELS, AND TAGS, DOOR-KNOB AND DRAWER-PULL. Door-knobs, drawer-pulls, and analogous devices specially designed for holding and exposing a card or label.

9. CHECKS, LABELS, AND TAGS, HAT. Labels and tags specially designed to be attached to hats to disclose the ownership thereof and which are not suitable for other uses.

Search Class—

2—APPAREL, subclass 103, Head-Coverings, Hats.

10. CHECKS, LABELS, AND TAGS, HOLDERS. Receptacles of miscellaneous construction for holding for display purposes checks, labels, and tags to protect them from loss or destruction while in ordinary use.

11. CHECKS, LABELS, AND TAGS, HOLDERS, CLIP. Card or label holders in which a card or label is supported in one or more slits in the upper end of the fastener. The fastener may be secured to the article by a similar slit in its lower end or by any other approved device.

CLASS 40—Continued.

12. CHECKS, LABELS, AND TAGS, HOLDERS, CORNICE. Racks designed for use in the interior of cars and omnibuses or in the room of a building at or near the junction of the roof or ceiling and the sides thereof for supporting and displaying advertising-cards.

13. CHECKS, LABELS, AND TAGS, HOLDERS, HINGED-CLAMP. Card or label holders provided with a hinged frame, a portion of which extends across or against the face of the inclosed card or label to prevent its accidental displacement.

14. CHECKS, LABELS, AND TAGS, HOLDERS, HINGED-CLAMP AND SPUR. Card and label holders comprising a hinged frame, a portion of which extends across or against the face of the inclosed card or label and is provided with one or more spurs or projections to impale the card or label and prevent it from being displaced.

15. CHECKS, LABELS, AND TAGS, HOLDERS, LOCK. Holders for checks or labels which comprise a lock for securing the check or label from displacement until released by the insertion of a proper key.

16. CHECKS, LABELS, AND TAGS, HOLDERS, SLIDE. Open-ended card or label holding display racks or pockets, the construction being such that the card or label is inserted edge-wise into the rack or pocket.

17. CHECKS, LABELS, AND TAGS, HOLDERS, SLIDE AND DETENT. Tags and holders for cards or labels provided with a slideway to receive the card or label and a projection or detent to prevent the card or label from accidental slipping out of the slideway.

18. CHECKS, LABELS, AND TAGS, HOLDERS, SLIDE AND DETENT, LIMITED-MOVEMENT. Cards or tags secured within pockets or retainers, so that they may be partly withdrawn therefrom for inspection, but which cannot be entirely withdrawn therefrom, being checked in their movement by a peculiar retaining device.

19. CHECKS, LABELS, AND TAGS, HOLDERS, TUBULAR. Tubular receptacles of any cross-section designed and constructed for containing and preserving identification cards, checks, or labels. These receptacles may be provided with an attaching device for securing the holder to an article.

20. CHECKS, LABELS, AND TAGS, FASTENERS. Miscellaneous devices designed for connecting and securing tags to articles.

21. CHECKS, LABELS, AND TAGS, FASTENERS, BAND. Tags provided with a fastener for securing them to articles, which fastener consists of a band adapted to be secured at its ends around a portion of the article. This subclass also includes devices peculiarly adapted for the attachment of a tag to a band which is secured around the article.

22. CHECKS, LABELS, AND TAGS, FASTENERS, BARBED. Tags in which the fastening device is provided with an enlarged head or barb for preventing the accidental removal of the fastening device from the article to which it is affixed.

23. CHECKS, LABELS, AND TAGS, FASTENERS, CLASP. Tags provided with fastening devices for securing them to articles by means of arms or branches which merely embrace or inclose the article or a portion thereof.

Search Class—

40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 11, Checks, labels, and tags, Holders, Clip.

24. CHECKS, LABELS, AND TAGS, FASTENERS, PIN-LOOP. Tags comprising fasteners formed of strips of wire or sheet metal adapted to be looped through or otherwise attached to the tag and having one or both ends of the strip free and pointed to penetrate the goods to which the tags are to be attached. The fastener may be twisted about the goods to prevent accidental displacement.

25. CHECKS, LABELS, AND TAGS, FASTENERS, SPUR. Tags provided with one or more separate integral pointed projections or spurs which are adapted to penetrate or pierce the article to which it is to be affixed. The spurs may be rigid and stiff, or flexible, so that they may be twisted or bent to prevent accidental withdrawal of the fastener.

Search Class—

40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 11, Checks, labels, and tags, Holders, Clip.

26. CHECKS, LABELS, AND TAGS, FASTENERS, SPRING-HOOK. Tags provided with snap-hook or buttonhole fastening devices and formed in whole or in part of resilient material.

27. CHECKS, LABELS, AND TAGS, REINFORCED. Labels and tags which are strengthened by miscellaneous reinforcing devices to prevent tearing or mutilation.

CLASS 40—Continued.

Search Class—

156—CURTAINS, SHADES, AND SCREENS, subclass 31, Shade, Sticks.

28. CHANGEABLE EXHIBITORS. Miscellaneous devices for changeably exhibiting cards, pictures, and signs, involving features of construction which do not permit of their being more specifically classified in any of the following subclasses under this title.

NOTE.—Devices comprising a characterized board and a movable pointer for selecting a particular character for observation are classified in class 116, SIGNALS, subclass 31, Indicators.

29. CHANGEABLE EXHIBITORS, AEROSTATIC. Display devices of a changeable character which are supported from a balloon, kite, or other aerostat.

30. CHANGEABLE EXHIBITORS, MOTOR-OPERATED. Changeable display devices which comprise a motor for effecting changes or causing different characters to appear for observation.

31. CHANGEABLE EXHIBITORS, MOTOR-OPERATED, DOUBLE REEL AND WEB. Changeable display devices comprising a characterized web or chain of characterized plates having its ends connected with rollers and a controlling-motor for operating the rollers and web to cause the characters to be successively displayed for observation.

32. CHANGEABLE EXHIBITORS, MOTOR-OPERATED, ENDLESS. Changeable display devices comprising a characterized endless web or endless chain of characterized plates which is controlled in its movements by a suitable motor to cause the characters to be successively displayed for observation.

33. CHANGEABLE EXHIBITORS, MOTOR-OPERATED, ROTABLE. Changeable display devices comprising rotating characterized parts, as plates, prisms, cylinders, etc., which are controlled in their rotation by means of a suitable motor, so that the characters may be successively displayed for observation.

34. CHANGEABLE EXHIBITORS, MOTOR-OPERATED, ROTABLE, DISK. Changeable display devices comprising one or more rotating characterized disks which are controlled in their movements by means of a suitable motor to successively display the characters thereon. The disk may or may not be rotated back of an aperture or sight-opening in a suitable face-plate.

35. CHANGEABLE EXHIBITORS, MOTOR-OPERATED, ROTABLE, HINGED LEAVES. Changeable display devices comprising a rotatable support to which characterized plates or leaves are flexibly connected, so that they may be successively displayed as the support is rotated by means of a suitable motor.

36. CHANGEABLE EXHIBITORS, MOTOR-OPERATED, SHIFTERS. Changeable display devices comprising a series of characterized plates or cards and motor-controlled mechanism for successively displaying the plates or cards for observation.

Search Classes—

194—CHECK-CONTROLLED APPARATUS.

211—STORE FURNITURE, subclass 29, Serving Apparatus.

37. CHANGEABLE EXHIBITORS, FLUID-OPERATED. Changeable display exhibiting devices of miscellaneous character which are changed or operated by pressure of a fluid, such as air, gas, steam, or water.

38. CHANGEABLE EXHIBITORS, FLUID-OPERATED, DOUBLE REEL AND WEB. Changeable display devices comprising a characterized web having its ends connected with rollers which are controlled by pressure of a fluid, as air, gas, steam, or water, to cause the characters to successively appear to the observer.

39. CHANGEABLE EXHIBITORS, FLUID-OPERATED, ROTABLE. Changeable display exhibiting devices which are caused to rotate by pressure of a fluid, as air, gas, steam, or water.

40. CHANGEABLE EXHIBITORS, FLUID-OPERATED, ROTABLE, ILLUMINATED. Changeable display devices comprising an illuminated characterized cylinder or other suitable inscription or picture bearing body which is made to rotate by pressure of a fluid, as air, gas, steam, or water.

Search Class—

240—ILLUMINATION, subclass 49, Lanterns, Revolving.

41. CHANGEABLE EXHIBITORS, AXLE-OPERATED. Display devices of a miscellaneous changeable character which are operated by motion imparted from the rotation of a vehicle axle or wheel.

42. CHANGEABLE EXHIBITORS, AXLE-OPERATED, DOUBLE REEL AND WEB. Changeable display devices comprising a characterized web which is secured at its ends to rollers, so as to be wound from one roller upon the other by means of gearing connected with the revolving axle or wheel of a vehicle, whereby the characters upon the web are successively displayed for observation.

43. CHANGEABLE EXHIBITORS, AXLE-OPERATED, ENDLESS. Display devices comprising an endless characterized web which is actuated from the revolving axle or wheel of a vehicle to successively display the characters to an observer.

CLASS 40—Continued.

44. CHANGEABLE EXHIBITORS, AXLE-OPERATED, ROTABLE. Axle-operated display devices which comprise one or more rotating characterized drums, cylinders, prisms, etc., which successively display the characters carried thereby as they are rotated.

45. CHANGEABLE EXHIBITORS, OBSTACLE-OPERATED. Changeable display devices of a miscellaneous character or devices for operating changeable display devices comprising mechanism which is actuated or started in motion by coming in contact with a suitable obstruction placed so as to be engaged by such mechanism, as the vehicle upon which it is carried moves past the obstruction.

46. CHANGEABLE EXHIBITORS, OBSTACLE-OPERATED, DOUBLE REEL AND WEB. Changeable display devices comprising a characterized web connected at its ends with two rollers, so that it is wound upon one roller as it is unwound from the other to successively display the different characters to an observer, the rollers being rotated by mechanism arranged to engage with suitable obstacles so placed as to be struck as the vehicle which supports the display device passes such obstacle.

47. CHANGEABLE EXHIBITORS, OBSTACLE-OPERATED, DOUBLE REEL AND WEB, CLUTCH TAKE-UP. Changeable display devices comprising an obstacle-operated double reel and characterized web, when the reels and web are connected with the operating mechanism by means of take-up clutch devices.

48. CHANGEABLE EXHIBITORS, OBSTACLE-OPERATED, ENDLESS. Changeable display devices comprising an endless characterized web or a chain of characterized plates supported upon rollers which are actuated by mechanism adapted to be set into motion as it comes into contact with a suitable obstacle placed in or near the track of the vehicle which supports the display device.

49. CHANGEABLE EXHIBITORS, OBSTACLE-OPERATED, ROTABLE. Changeable display devices comprising a rotating characterized cylinder or prism and an operating mechanism therefor adapted to come into engagement with a suitably-placed obstacle and be set into motion by such engagement, whereby the characters are successively presented for observation.

50. CHANGEABLE EXHIBITORS, OBSTACLE-OPERATED, SHIFTERS. Changeable display devices comprising a plurality of characterized cards or plates and controlling mechanism by which they are adapted to be shifted or changed from one position to another, so that they may be successively displayed for observation, the shifting mechanism being started in motion by engagement with suitable obstacles located in the path of the vehicle which supports the display device.

51. CHANGEABLE EXHIBITORS, PENDULUM-OPERATED. Changeable display devices comprising a pendulum or swinging weight connected by ratchet or clutch mechanism with a roller, so that as the pendulum is vibrated the roller is rotated to change the characters of a suitable exhibiting device actuated by such roller.

Search Class—

40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 139, Signs, Vibratory, Motor-operated.

52. CHANGEABLE EXHIBITORS, ELECTRICALLY-CONTROLLED. Electrically-controlled mechanism for changeably exhibiting cards, pictures, or signs, the source of the electricity being immaterial.

53. CHANGEABLE EXHIBITORS, ELECTRICALLY-CONTROLLED, ELECTROMOTOR-OPERATED. Changeable exhibitors for displaying cards, pictures, and signs which comprise an electromotor for producing the desired changes and an electric controlling mechanism for starting or stopping the electromotor or for connecting and disconnecting the change-producing mechanism with the motor.

54. CHANGEABLE EXHIBITORS, ELECTRICALLY-CONTROLLED, MAGNETO-CLUTCH LET-OFF. Changeable exhibitors for displaying cards, pictures, and signs comprising a motor for producing the desired changes and an electrically-controlled magnet-armature so connected with a clutch as to release the motor or to disconnect the motor and change-producing mechanism at will.

55. CHANGEABLE EXHIBITORS, ELECTRICALLY-CONTROLLED, MAGNETO-CLUTCH TAKE-UP. Changeable exhibitors for displaying cards, pictures, and signs comprising an electro-magnet and an armature, the latter provided or connected with a ratchet-pawl to engage with and operate a ratchet-wheel of the changeable exhibitor when an electric current is passed through the electromagnet.

56. CHANGEABLE EXHIBITORS, ELECTRICALLY-CONTROLLED, OBSTACLE-CONTROLLED CIRCUIT-CLOSERS. Electric - circuit - controlling mechanisms for changeable display devices carried by cars and vehicles comprising a projecting lever or arm carried by the car or vehicle, adapted to come into contact with suitable obstacles situated in or near the course of the car or vehicle, the movement of the lever or arm caused by such obstruction being such as to close and open the circuit of an electric current to operate the changeable exhibitor.

CLASS 40—Continued.

57. **CHANGEABLE EXHIBITORS, ELECTRICALLY-CONTROLLED, OBSTACLE-CONTROLLED CIRCUIT-CLOSERS, ELECTROMOTOR-OPERATED.** Changeable exhibiting devices for displaying cards, pictures, and signs in cars or vehicles and which comprise an electromotor for effecting the desired changes and a suitable circuit-controlling mechanism, which is in turn controlled by obstacles placed in or adjacent to the path of the car or vehicle to engage with and move a lever or arm to complete or break an electric circuit which operates the electromotor.
58. **CHANGEABLE EXHIBITORS, ELECTRICALLY-CONTROLLED, OBSTACLE-CONTROLLED CIRCUIT-CLOSERS, MAGNETO-CLUTCH LET-OFF.** Changeable exhibitors for displaying cards, pictures, and signs in cars and vehicles. The mechanism for effecting the change of display comprises an obstacle-controlled electric-circuit closing and breaking device, an electromagnet and its armature provided with a ratchet in engagement with a ratchet-wheel forming a part of the changeable exhibiting device. An arm or lever projected from the car is adapted to be engaged by obstacles placed in or adjacent to the path of the car or vehicle, and when so engaged the arm or lever will be moved to complete or break an electric circuit. When the circuit is completed or broken, the electromagnet will attract or release the armature and the pawl carried thereby will be moved to release the ratchet-wheel of the changeable exhibitor and permit the display to be changed.
59. **CHANGEABLE EXHIBITORS, ELECTRICALLY-CONTROLLED, OBSTACLE-CONTROLLED CIRCUIT-CLOSERS, MAGNETO-CLUTCH TAKE-UP.** Changeable exhibitors for displaying cards, pictures, and signs in cars and vehicles. The mechanism for effecting the change of display comprises an obstacle-controlled electric-circuit closing and breaking device, an electro-magnet and its armature provided with a ratchet in engagement with a ratchet-wheel forming part of the changeable exhibiting device. An arm or lever projected from the car is adapted to be engaged by obstacles placed in or adjacent to the path of the car or vehicle, and when so engaged the arm or lever will be moved to complete or break an electric circuit. When the circuit is completed or broken, the electromagnet will attract or release the armature and the pawl carried thereby will be moved to positively actuate the ratchet-wheel of the changeable exhibitor and cause the display to be changed.
60. **CHANGEABLE EXHIBITORS, DOOR-OPERATED.** Mechanism for swinging a sign to attract attention or for operating a changeable display device by the swinging of a door or gate.
61. **CHANGEABLE EXHIBITORS, INSCRIPTION-COVERS.** Devices for changeably exhibiting characters or inscriptions comprising a movable cover for temporarily shutting one or more of the characters or inscriptions from observation and leaving nothing exposed except what is to be observed.
- Search Class—**
116—SIGNALS, subclass 31, Indicators.
62. **CHANGEABLE EXHIBITORS, INSCRIPTION-COVERS, SLIDING.** Devices for changeably exhibiting characters or inscriptions comprising a sliding shutter by means of which one or more of the characters or inscriptions may be obscured from view and only such as are to be observed are exposed.
- Search Class—**
116—SIGNALS, subclass 50, Indicators, Sliding.
63. **CHANGEABLE EXHIBITORS, INTERCHANGEABLE PLATES.** Display devices, exclusive of educational appliances and signs comprising interchangeable letters, consisting of a frame provided with recesses within which characterized plates may be shifted or changed at will.
- Search Classes—**
40—CARD, PICTURE AND SIGN EXHIBITING, subclass 140, Signs, Interchangeable letters, and the subclasses thereunder.
35—EDUCATIONAL APPLIANCES.
64. **CHANGEABLE EXHIBITORS, INTERCHANGEABLE PLATES, SLIDING.** Display devices comprising a frame provided with slide grooves or rods within or upon which are temporarily secured detached characterized plates or slides. The construction is such that the characterized plates may be changed at will.
- Note.**—This subclass does not include signs formed with interchangeable letters. Such are found in this class under the subtitle of Signs, Interchangeable letters.
65. **CHANGEABLE EXHIBITORS, SLIDING PLATES.** Display-boards provided with sliding characterized plates which may be projected from the back of the board at will so that the characters may be observed either beyond the edges of the board or through an aperture therein.
66. **CHANGEABLE EXHIBITORS, SLIDING PLATES, BOLT-OPERATED.** Door-signs in which the inscriptions are changed by the operations of bolting and unbolting the door.
- Search Class—**
40—CARD, PICTURE AND SIGN EXHIBITING, subclass 60, Changeable exhibitors, Door-operated.
67. **CHANGEABLE EXHIBITORS, PIVOTED PLATES.** Display devices provided with several boards or frames pivoted thereon to turn edgewise, carrying inscriptions or pictures, so that one or more of the plates or frames may be thrown out for observation.

CLASS 40—Continued.

68. **CHANGEABLE EXHIBITORS, ROTATABLE.** Display devices provided with characterized drums, cylinders, prisms, or boards which may be revolved at will to successively present the inscriptions or pictures thereon for observation.
- Search Class—**
40—CARD, PICTURE AND SIGN EXHIBITING, subclass 37, Changeable exhibitors, Fluid-operated.
69. **CHANGEABLE EXHIBITORS, ROTATABLE, CLUTCH TAKE-UP.** Rotatable changeable display exhibiting devices which are provided with a clutch take-up mechanism for operating the rotating part with a step-by-step motion.
70. **CHANGEABLE EXHIBITORS, ROTATABLE, DISK.** Display devices comprising characterized disks which may be rotated at will to successively bring different inscriptions or pictures to view.
- Search Classes—**
40—CARD, PICTURE AND SIGN EXHIBITING, subclass 111, Calendars, Rotatable.
116—SIGNALS, subclasses 31, Indicators, Office; and 49, Indicators, Rotary.
71. **CHANGEABLE EXHIBITORS, ROTATABLE, DISK, CLUTCH TAKE-UP.** Rotatable disk changeable display exhibiting devices which are provided with a clutch take-up mechanism for operating the rotating part with a step-by-step motion.
72. **CHANGEABLE EXHIBITORS, ROTATABLE, HINGED LEAVES.** Changeable display devices comprising a rotatable support to which characterized plates are pivoted in such manner that the characters upon the plates may be successively displayed as the support is rotated.
- Search Class—**
40—CARD, PICTURE AND SIGN EXHIBITING, subclass 49, Changeable exhibitors, Obstacle-operated, Rotatable.
73. **CHANGEABLE EXHIBITORS, ROTATABLE, HINGED LEAVES, CLUTCH TAKE-UP.** Changeable display devices comprising a rotatable support to which characterized plates are pivoted in such manner that the characters upon the plates may be successively displayed as the support is caused to rotate by means of a clutch take-up mechanism.
74. **CHANGEABLE EXHIBITORS, ROTATABLE, RADIALLY-MOVABLE LEAVES.** Changeable display devices comprising a rotatable support in which characterized plates are mounted so as to be successively slid in a radial direction from the rotatable support to display the characters thereon.
75. **CHANGEABLE EXHIBITORS, ROTATABLE, RADIALLY-MOVABLE LEAVES, CLUTCH TAKE-UP.** Changeable display devices comprising a rotatable support in which characterized plates are mounted so as to be slid in a radial direction from the rotatable support to display the characters thereon, the rotation of the support being controlled by a clutch take-up mechanism.
76. **CHANGEABLE EXHIBITORS, ROTATABLE, MULTIPLE-DRUM CONTROLLERS.** Changeable display devices comprising a plurality of rotatable characterized parts which are controlled in their rotation by a master mechanism to change the relative arrangements of the characters displayed from the rotatable parts. This subclass includes train-annunciators wherein the master mechanism controls the extent of rotation of each rotatable part, so that some may be rotated farther than others to bring the proper characters thereon into view.
77. **CHANGEABLE EXHIBITORS, ROTATABLE, ILLUMINATED.** Changeable display devices comprising an illuminated and characterized part which may be rotated to successively display the characters thereon.
78. **CHANGEABLE EXHIBITORS, SHIFTERS.** Exhibiting devices comprising a plurality of independent characterized cards or plates with mechanism for successively displaying them. The cards or plates may be caused to successively appear at the front of a pack, slide along one after the other back of a sight-opening, or to be successively pushed forward, displayed, and then retracted.
79. **CHANGEABLE EXHIBITORS, SHIFTERS, RECIPROCATING.** Changeable display devices comprising characterized cards or plates and a reciprocating carrying mechanism to slide or shift the cards from one position to another, so that they may be successively displayed for observation.
80. **CHANGEABLE EXHIBITORS, SHIFTERS, REVOLVING.** Changeable display devices comprising a revolving trunnioned box provided with sight-apertures through which inclosed characterized cards or plates may be observed. The construction of the box is such that the cards are shifted in position by the rotation thereof to successively display the characters.
81. **CHANGEABLE EXHIBITORS, SHIFTERS, REVOLVING PACK-CASE.** Changeable display devices comprising a plurality of independent characterized cards or plates which are carried in a two-celled case in such manner that the rotation of the case shifts the cards or plates one at a time from one cell to the other, the case being provided with sight-apertures, through which the cards or plates may be successively observed.

CLASS 40—Continued.

82. CHANGEABLE EXHIBITORS, SINGLE REEL AND WEB. Changeable display devices comprising a characterized web having one end connected to a roller, about which it is adapted to be wound more or less to expose different characters for observation.

Note.—This subclass does not include patents for displaying samples of articles of merchandise.

Search Classes—

- 156—CURTAINS, SHADES, AND SCREENS, and 211, STORE FURNITURE, subclass 18, Display-racks, Roll.

83. CHANGEABLE EXHIBITORS, SINGLE REEL AND WEB, REEL-CABINETS. Changeable display devices comprising a plurality of characterized-web-bearing rollers which are compactly mounted in a protecting-frame of such construction as to permit the webs to be unrolled from the rollers and depend therefrom for observation.

Search Class—

- 211—STORE FURNITURE, subclass 18, Display-racks, Roll.

84. CHANGEABLE EXHIBITORS, SINGLE REEL AND WEB, REEL-CABINETS, REVOLVING. Changeable display devices comprising a plurality of characterized-web-bearing rollers which are compactly mounted in a revolving frame which is of such construction as to permit the webs to be unrolled from the rollers and depend therefrom for observation.

Search Class—

- 211—STORE FURNITURE, subclass 18, Display-racks, Roll.

85. CHANGEABLE EXHIBITORS, SINGLE REEL AND WEB, SPRING-REWIND. Changeable display devices comprising a characterized web having one end connected to and wound upon a spring-controlled roller, from which it is adapted to be unwound more or less to expose different characters for observation.

Search Classes—

- 156—CURTAINS, SHADES, AND SCREENS, and 211, STORE FURNITURE, subclass 18, Display-racks, Roll.

86. CHANGEABLE EXHIBITORS, DOUBLE REEL AND WEB. Changeable display devices comprising a characterized web having its ends connected with rollers in such manner as to be wound upon one roller as it is unwound from the other and to thereby successively display the characters thereon for observation.

87. CHANGEABLE EXHIBITORS, DOUBLE REEL AND WEB, CLUTCH TAKE-UP. Changeable display devices comprising a roller-operating take-up clutch to operate a characterized web carried by two rollers to which it is secured at its ends, whereby upon the rotation of the rollers the web is rolled from one roller upon the other to successively display the characters thereon.

88. CHANGEABLE EXHIBITORS, DOUBLE REEL AND WEB, CLUTCH TAKE-UP, REVERSIBLE-CLUTCH. Changeable display devices comprising a roller-operating take-up clutch which may be reversed to operate, in either direction, the rollers to which the ends of a characterized web are secured, so that the direction of movement of the web may be reversed when it is completely unwound from one of the rollers.

89. CHANGEABLE EXHIBITORS, DOUBLE REEL AND WEB, SPRING-REWIND. Changeable display devices comprising a characterized web having its ends connected to rollers, so that it may be wound from one roller upon the other. One of the rollers is so connected with a spring that it is wound closer as the web is unwound from the roller and tends to keep the web stretched taut between the rollers and to wind the web upon the spring-controlled roller when permitted to do so.

90. CHANGEABLE EXHIBITORS, DOUBLE REEL AND WEB, SPRING-REWIND, CLUTCH TAKE-UP. Changeable display devices comprising a characterized web having its ends secured to two rollers, one of which is so connected with a coiled spring as to tend to wind the web thereon. The roller which is not provided with a spring is positively rotated to wind the web thereupon against the tension of the spring controlled roller by means of a clutch take-up device.

91. CHANGEABLE EXHIBITORS, DOUBLE REEL AND WEB, SPRING-REWIND, CLUTCH LET-OFF. Changeable display devices comprising a characterized web having its ends secured to two rollers, one of which is actuated to turn in one direction by means of a coiled spring, the movement of the spring-actuated roller being controlled by an escapement or let-off clutch.

92. CHANGEABLE EXHIBITORS, DOUBLE REEL AND WEB, SPRING REWIND, CLUTCH LET-OFF, OBSTACLE-TRIP. Changeable display devices comprising a characterized web having its ends secured to two rollers, one of which is actuated to turn in one direction by means of a coiled spring, the movement of the spring-actuated roller being controlled by an escapement or let-off clutch, which is in turn set in motion by means of a tripping device so placed as to come in contact with a designed obstacle.

93. CHANGEABLE EXHIBITORS, DOUBLE REEL AND WEB, REVERSING-GEARS. Changeable display devices comprising a characterized web having its ends connected with two rollers which are operated in opposite directions by means of gear-shifting devices.

CLASS 40—Continued.

Search Class—

- 40—CARD, PICTURE AND SIGN EXHIBITING, subclass 91, Changeable exhibitors, Double reel and web, Spring-rewind, Clutch let-off.

94. CHANGEABLE EXHIBITORS, DOUBLE REEL AND WEB, REVERSING-GEARS, CLUTCH TAKE-UP. Changeable display devices comprising a characterized web having its ends connected to rollers which are controlled in their movements by reversing-gears and clutch take-up devices.

95. CHANGEABLE EXHIBITORS, DOUBLE REEL AND WEB, INTERGEARED REELS. Changeable display devices comprising a characterized web which has its ends connected to rollers, so as to be wound from one roller upon the other. In this subclass the rollers are caused to turn with the same velocity by means of intermeshing gears or equivalent connecting mechanism.

Search Class—

- 40—CARD, PICTURE AND SIGN EXHIBITING, subclasses 87, Changeable exhibitors, Double reel and web, Clutch take-up; 88, Changeable exhibitors, Double reel and web, Clutch take-up, Reversible clutch, and 42, Changeable exhibitors, Axle-operated, Double reel and web.

96. CHANGEABLE EXHIBITORS, ENDLESS. Changeable display devices comprising an endless characterized web or an endless chain of characterized plates or cards so supported that it may successively display the characters to an observer.

Search Class—

- 40—CARD, PICTURE AND SIGN EXHIBITING, subclasses 32, Changeable exhibitors, Motor-operated, Endless; 37, Changeable exhibitors, Fluid-operated; 43, Changeable exhibitors, Axle-operated, Endless; 48, Changeable exhibitors, Obstacle-operated, Endless, and 118, Calendars, Endless.

97. CHANGEABLE EXHIBITORS, ENDLESS, HINGED LEAVES. Changeable display devices comprising a web having flexibly secured thereto depending characterized leaves which are successively displayed to the observer as the carrying-web is caused to move along.

98. CHANGEABLE EXHIBITORS, ENDLESS, RADIAL LEAVES. Changeable display exhibiting devices comprising an endless web or chain of links or plates from which project rigid characterized plates or picture-holders which project at right angles from the web, so that as the web is moved along the characterized plates or pictures are successively displayed for observation.

99. CHANGEABLE EXHIBITORS, ENDLESS, CLUTCH TAKE-UP. Changeable display devices comprising a characterized web or a chain of characterized plates supported by one or more rollers which are caused to rotate by means of a clutch take-up device.

Search Class—

- 40—CARD, PICTURE AND SIGN EXHIBITING, subclasses 28, Changeable exhibitors, and 48, Changeable exhibitors, Obstacle-operated, Endless.

100. CHANGEABLE EXHIBITORS, FOLDING WEB AND REEL. Changeable display devices comprising a chain of characterized plates which are adapted to be folded back and forth to occupy a small space and to be unfolded and successively displayed for observation by the rotation of a polygonal or sprocket roller which engages with the plates.

101. CHANGEABLE EXHIBITORS, FOLDING WEB AND REEL, CLUTCH TAKE-UP. Changeable display devices comprising a chain of characterized plates which are adapted to be unfolded and successively displayed by means of a clutch-operated polygonal or sprocket roller which engages with the plates comprising the chain.

102. CHANGEABLE EXHIBITORS, HINGED LEAVES. Changeable display devices comprising hinged characterized leaves or frames connected to form an album or a structure somewhat like a book, so that the characters may be successively displayed as the leaves or frames are turned on their hinges.

Search Class—

- 211—STORE FURNITURE, subclass 14, Display-Racks and the several subclasses thereunder.

103. CHANGEABLE EXHIBITORS, HINGED LEAVES, LEAF-RELEASES. Changeable display devices comprising hinged characterized leaves or frames connected to form a structure somewhat like a book standing upon its back, with a releasable detent device for holding the leaves in a vertical position until it is desired to release a leaf or frame to allow it to be turned down by gravity to display the characters thereon.

Search Class—

- 84—Music, Leaf-Turners, subclass 135, Spring and gravity.

104. CHANGEABLE EXHIBITORS, HINGED LEAVES, LEAF-TURNERS. Changeable display devices comprising hinged characterized leaves or frames connected to form book-like structures and provided with mechanism to engage and turn the leaves to successively display the characters thereon for observation.

Search Class—

- 84—Music, subclass 135, Leaf-Turners.

CLASS 40—Continued.

105. **CHANGEABLE EXHIBITORS, TRAIN-ORDER HOLDERS.** Changeable display devices comprising supports for temporarily holding and displaying despatches and messages for railway-trainmen.
106. **CHANGEABLE EXHIBITORS, COUPLINGS.** Mechanism for connecting two display devices together when they are placed in different cars and are to be operated simultaneously.
107. **CALENDARS.** Miscellaneous devices for disclosing the relation of the days and months in a given year or series of years. In some instances they disclose additional astronomical data. Calendars also comprise devices for calling attention to memoranda or appointments to be noted on particular days of the month.
- Search Classes—**
 58—HOROLOGY, subclass 4, Clocks, Calendar, and subclasses thereunder, and subclass 58, Watches, Calendar.
 120—STATIONERY, subclass 1, Combination Devices.
108. **CALENDARS, PENCIL ATTACHMENTS.** Calendar attachments specially designed for use in connection with pencils or penholders in which the claims embody some improvement or change in the construction of the calendar *per se* and do not include changes in the pencil *per se* except such as are necessary in order to adapt the new calendar thereto.
109. **CALENDARS, CHARACTERED-SLIDE.** Calendars embodying a charactered plate or sliding part which slides back of one or more openings in a suitable support to disclose a number of characters therethrough or which slides upon the face of a charactered support to shift certain of the characters on the sliding part opposite certain other characters upon the support to bring into proper relation the names of the days of the week and the corresponding numbers of the days of the month for any desired month.
110. **CALENDARS, CHARACTER - MARKERS.** Calendars comprising a charactered plate and a movable pointer or marker which may be placed at will opposite any particular character to attract attention thereto.
- Search Classes—**
 116—SIGNALS, subclass 31, Indicators.
 235—REGISTERS.
111. **CALENDARS, ROTATABLE.** Calendars comprising charactered rollers mounted to rotate in a suitable frame, so as to present different characters as the rollers are rotated.
112. **CALENDARS, ROTATABLE, CLUTCH TAKE-UP.** Calendars comprising one or more rotatable charactered parts placed back of openings in the face of a suitable support, so that the characters may be observed through such openings, and suitable clutch mechanism whereby such charactered parts may be rotated.
113. **CALENDARS, ROTATABLE, DISK.** Calendars comprising charactered disks mounted upon the back of a suitable support, so that the characters upon the faces of the disks may appear through sight-openings in the support. This subclass includes calendars comprising overlapping eccentric disks which when rotated show different combinations of figures to make different numbers; also, a single rotating charactered disk mounted upon a charactered support, so that by rotating the disk a different combination of characters can be effected.
114. **CALENDARS, ROTATABLE, SINGLE-AXIS.** Calendars comprising a plurality of charactered drums, cylinders, or prisms arranged to be rotated upon a single axis, so as to arrange a plurality of combinations of calendar characters suitable for different periods of time.
- Search Class—**
 40—CARD, PICTURE AND SIGN EXHIBITING, subclass 108, Calendars, Pencil attachments.
115. **CALENDARS, ROTATABLE, SINGLE-AXIS, DISK.** Calendars comprising several charactered disks of different sizes mounted concentrically to turn upon a single axis. The disks may be upon the face of a suitable support and present rings of characters, or they may be upon the rear of the support and the characters exposed through suitable sight-openings.
116. **CALENDARS, SINGLE REEL AND WEB.** Calendars comprising a charactered web and a suitable roller to which the web may be attached and about which the web may be wound. The roller may be carried in bearings in a suitable support.
- Search Class—**
 40—CARD, PICTURE AND SIGN EXHIBITING, subclass 108, Calendars, Pencil attachments.
117. **CALENDARS, DOUBLE REEL AND WEB.** Calendars comprising a charactered web having its ends connected to rollers, the web being adapted to be wound upon one of the rollers as it is unwound from the other.
118. **CALENDARS, ENDLESS.** Calendars comprising one or more endless webs bearing the numbers of the days of the month, the numbers of the years, the names of days of the week, or the names of the months of the year and capable of being shifted to properly designate the dates of any particular week or month.

CLASS 40—Continued.

119. **CALENDARS, HINGED LEAVES.** Calendars comprising a plurality of charactered leaves flexibly connected together, as in a book, so that the leaves may be turned over to expose the characters upon the succeeding leaves.
- Search Class—**
 40—CARD, PICTURE AND SIGN EXHIBITING, subclass 120, Calendars, Stands.
120. **CALENDARS, STANDS.** Stands or frames for supporting block, pad, or tablet calendar leaves of such construction as to permit the front leaves to be successively removed or turned back to display the face of the following leaf.
121. **CALENDARS, TEAR-OFF TABLETS.** Calendars comprising a block, pad, or tablet of charactered leaves so constructed as to permit the leaves to be successively removed as the dates designated thereon have expired.
- Search Class—**
 40—CARD, PICTURE AND SIGN EXHIBITING, subclass 123, Calendars, Printing arrangement.
122. **CALENDARS, CARD-POCKETS.** Calendars comprising a pack of calendar-cards held in a suitable open-faced envelop, receptacle, or frame, so that the front card may be removed and inserted at the rear of the pack to expose the following card to view.
- Search Class—**
 40—CARD, PICTURE, AND SIGN EXHIBITING subclass 10, Checks, labels, and tags, Holders.
123. **CALENDARS, PRINTING ARRANGEMENT.** Calendar patents in which the invention lies in the characters themselves or in the specific arrangement of the printed characters.
- Search Class—**
 40—CARD, PICTURE AND SIGN EXHIBITING, subclasses 109, Calendars, Charactered-slide; 113, Calendars, Rotatable, Disk, and 115, Calendars, Rotatable, Single-axis, Disk.
124. **CARD-RACKS.** Wire racks or supports of notched metal or wood, usually adapted to be hung upon a wall or other vertical surface to support and display business or picture cards.
- 124.5. **MEMORIAL TABLETS.** Devices in the nature of name plates and picture retainers designed to be placed on monuments and used for like purposes.
125. **SIGNS.** This subclass comprises inscribed boards, cards, plates, or objects whereby definite information may be conveyed to the observer.
- Note.**—Imitation articles which are used for sign purposes are also included in the subclass 126, Signs, Dummies, in this class.
126. **SIGNS, DUMMIES.** Imitation articles or figures used for display purposes to indicate some trade, business, or profession or the sale of some article of commerce.
127. **SIGNS, AEROSTATIC.** Display devices of an unchangeable character which are supported from a balloon, kite, or other aerostat.
128. **SIGNS, HANGING.** Fixed or swinging signs which depend from an overhead support.
129. **SIGNS, PORTABLE.** Signs to be displayed while being carried about from place to place by a person, animal, or vehicle.
- Search Class—**
 240—ILLUMINATION, appropriate subclasses.
130. **SIGNS, ILLUMINATED.** Signs in which the characters or legends are made more apparent by means of a special illuminating device.
- Search Classes—**
 177—ELECTRIC SIGNALING, subclass 346, Systems, Display, and subclasses thereunder.
 240—ILLUMINATION, subclass 11; Lanterns, and subclasses thereunder.
131. **SIGNS, ILLUMINATED, LAMP ATTACHMENTS.** Signs designed to be secured to a lamp-post or lamp, so that the sign shall be illuminated by the light from the lamp.
132. **SIGNS, ILLUMINATED, LAMP-BOXES.** Lamp-boxes having one or more of their sides provided with a sign through which the light from the inclosed lamp passes.
133. **SIGNS, ILLUMINATED, LAMP-BOXES, PERFORATED-FACE.** Signs comprising lamp-inclosing boxes of wood, metal, or other opaque material having perforations therein outlining legends or characters, which perforations are usually filled or covered with transparent or translucent material.
134. **SIGNS, ILLUMINATED, LUMINOUS-PAINT.** Signs in which the characters are outlined or made conspicuous by luminous paint.
135. **SIGNS, MULTIPLE-LAYER.** Signs formed of superimposed layers of differently-colored materials, not simply painted boards.
- Search Class—**
 40—CARD, PICTURE, AND SIGN EXHIBITING, subclasses 125, Signs, and 130, Signs, Illuminated.

CLASS 40—Continued.

136. SIGNS, EMBOSSED, MOLDED, ROLLED, OR STAMPED. Signs formed of material which is given the desired configuration by means of embossing, molding, rolling or stamping processes.

Search Class—

- 40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 154, Picture-frames, Embossed, molded, rolled, or stamped.

137. SIGNS, VARIABLE-READING. Signs which have some of the characters placed upon parts projecting angularly from the body thereof, the effect of which is to cause the reading to change as the position of the observer is changed.

138. SIGNS, VIBRATORY. Signs which in whole or in part vibrate, and thus attract attention thereto.

139. SIGNS, VIBRATORY, MOTOR-OPERATED. Signs which in whole or in part vibrate to attract attention, the vibration being effected by some mechanical motor.

140. SIGNS, INTERCHANGEABLE LETTERS. Signs comprising letters of a miscellaneous character constructed to be arranged together upon a suitable support to form the design or legend, and fastening devices for such letters special thereto.

141. SIGNS, INTERCHANGEABLE LETTERS, GLASS. Signs comprising interchangeable letters the principal ingredient of which is glass.

142. SIGNS, INTERCHANGEABLE LETTERS, FASTENERS. Interchangeable signs comprising miscellaneous fastening devices for securing the sign-letters in position upon a suitable support to form the legend or design.

143. SIGNS, INTERCHANGEABLE LETTERS, FASTENERS, PRONG. Signs and separate letters for signs in which a prong or spur projection is used as the means for securing the letter to the background or support.

144. SIGNS, INTERCHANGEABLE LETTERS, FASTENERS, STRING. Signs and separate letters for signs in which the letters are threaded or strung along a string, wire, or band which passes through the letters or through one or more projections formed upon the letters.

145. SIGNS, POST ATTACHMENTS. Signs which are particularly adapted to be secured to and supported by a post. This subclass also includes devices which are specially constructed for securing signs to posts.

Search Class—

- 40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 131, Signs, Illuminated, Lamp attachments.

- 145.1. PICTURE-HANGERS. Miscellaneous devices adapted particularly for the hanging of pictures, mirrors, and similar articles on walls and include molding-hooks.

Note.—Devices for adjusting mirrors relative to the wall or support are found in class 45, FURNITURE, subclasses 18, Mirrors, and 97, Mirrors, Bracket.

- 145.2. PICTURE-HANGERS, ADJUSTABLE. Devices for varying either the inclination or the vertical position of the picture.

Search Class—

- 40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 145.7, Picture-hangers, Plaque-retainers.

- 145.3. PICTURE-HANGERS, ADJUSTABLE, CORD. Devices in which a cord or flexible part is adjusted.

- 145.4. PICTURE-HANGERS, ADJUSTABLE, CORD, PAWL AND RATCHET. The adjustment is made by means of a pawl and ratchet.

- 145.5. PICTURE-HANGERS, ADJUSTABLE, STEPS. The adjustment is by steps and not continuous.

- 145.6. PICTURE-HANGERS, ADJUSTABLE, SLIDE AND CLAMP. The title explains itself.

- 145.7. PICTURE-HANGERS, PLAQUE-RETAINERS. Devices which grip the edges of plaques or plates and are adapted for suspending them on walls.

- 145.8. PICTURE-HANGERS, RETAINING-CORD. The hanging device has the additional function of holding the picture-cord in a given position.

- 145.9. PICTURE-HANGERS, MOLDING-HOOKS. Hooks adapted for use on picture-moldings.

146. PICTURE STANDS AND SUPPORTS. Portable stands or props for supporting cards, maps, or pictures in an upright position for display purposes. The front of the support may itself constitute the card or picture back, or there may be separate holding devices for securing a card or picture upon the support.

CLASS 40—Continued.

Note.—Such supporting-stands as are designed for supporting articles of merchandise other than cards, maps, or pictures are classified in class 211, STORE FURNITURE, subclass 34, Display-Cards, or subclass 24, Display-Stands.

147. PICTURE STANDS AND SUPPORTS, ILLUMINATORS. Picture-supports comprising reflecting surfaces whereby the picture is illuminated; also, stands, which hold the picture so that light may be transmitted through the picture to illuminate it.

148. PICTURE STANDS AND SUPPORTS, FRAMES. Picture-supports in which the front or picture-supporting portion comprises a picture-frame, and the brace is frequently a bail, which serves also as a suspension-loop when it is desired to hang the picture.

149. PICTURE STANDS AND SUPPORTS, SINGLE-BLANK. Picture-supports in which the entire article (the supporting card or board and the brace at the rear) is cut in the form of a single blank and bent to the desired shape.

150. PICTURE STANDS AND SUPPORTS, SINGLE-BLANK, BRACES. Picture supports and braces cut in the form of a single blank and bent to proper form to constitute both the brace and the part to be secured to the picture or to the card which supports the picture.

151. PICTURE STANDS AND SUPPORTS, WIRE. Picture-supports constructed entirely of wire or metal strips bent to proper form to engage the picture and support it in upright position for observation.

152. PICTURE-FRAMES. Structures for partially inclosing and displaying cards, pictures, or signs to preserve them in shape and permit of their observation. In some instances these frames are mere stiffening devices secured to the edges of the article to be displayed. In others they are built-up structures, which inclose the article at the back and edges.

Note.—This subclass does not include those structures where the structure of the card, picture, or sign is an essential element of the combination claimed, such combinations being classified in class 41, ORNAMENTATION.

Search Classes—

- 40—CARD, PICTURE, AND SIGN EXHIBITING, subclasses 148, Picture stands and supports, Frames; 159, Picture-frames, Mats, Mounts, and Backs, Pocketed; 120, Stationery, subclass 82, Paper-weights.

153. PICTURE-FRAMES, CORD OR WIRE. Frames comprising strips of cord or wire secured along or near the edges of cards or pictures to form an ornamental border therefor and which in some instances may furnish a means for hanging the card or picture.

154. PICTURE-FRAMES, EMBOSSED, MOLDED, ROLLED, OR STAMPED. Frames made of material which is shaped by being cast in molds, embossed, rolled, or stamped with the desired pattern.

155. PICTURE-FRAMES, EXTENSIBLE, FOLDING, OR KNOCKDOWN. Frames made adjustable to inclose different-sized cards or pictures or made capable of being dismantled and folded to occupy a small space for storage or transportation.

156. PICTURE-FRAMES, CARD OR PICTURE RETAINERS. Devices for securing cards or pictures in place within their frames. They comprise clamps, buttons, beading-strips, springs, etc., secured to the frame so as to bear against the card or picture.

157. PICTURE-FRAMES, COVER-RETAINERS. Devices for securing gauze, netting, or other protecting material over picture-frames and pictures.

Search Class—

- 40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 155, Picture-frames, Extensible, folding, or knockdown.

158. PICTURE-FRAMES, MATS, MOUNTS, AND BACKS. Firm and stiff paper or thin boards for supporting and strengthening pictures to prevent them from being easily bent and, in some instances, for forming an ornamental border around the edges of the pictures.

159. PICTURE-FRAMES, MATS, MOUNTS, AND BACKS, POCKETED. Mats, mounts, and backs provided with recesses or pockets within which the picture is partially inclosed.

160. PICTURE-FRAMES, RELIEF-PICTURE. Frames for pictures having raised surfaces and for game pieces, as stuffed and mounted skins of birds, fishes, or other animals, and mounted heads or horns of animals.

Search Class—

- 35—EDUCATIONAL APPLIANCES, subclass 12, Miscellaneous.

CLASS 41.—ORNAMENTATION

DEFINITIONS.

Class.

The miscellaneous and parent class covering inventions relating to ornamental forms and surface ornamentation not elsewhere provided for.

Apparatus falling in this class is placed in subclass 1, Apparatus and appliances, or the subclasses thereunder.

Objects and processes of making the same other than substantially flat panels or decorations when falling in this class are placed in subclass 10, Ornamental forms, or the subclasses thereunder.

Surface ornamentation and substantially flat panels, including processes of producing the same, when falling in this class are placed in subclass 17, Surface type, or the subclasses thereunder.

Note.—An invention comprising matter classifiable in more than one specific subclass of this class is placed in the subclass having the lowest number and cross-referenced into the subclass or subclasses having a higher number or numbers.

Note.—For further information see the subclass definitions.

Subclasses.

1. APPARATUS AND APPLIANCES. Apparatus or appliances not elsewhere classifiable for producing ornamental objects or surfaces.

Search Class—

41—ORNAMENTATION, subclass 33, Surface type, Transfers, for sheets for transferring dealcomania designs.

2. APPARATUS AND APPLIANCES, IMITATION FLOWER MAKING. Apparatus not falling in any general class for producing imitation flowers, fruit, and foliage.

Search Class—

92—PAPER MAKING AND FIBER LIBERATION, subclass 69, Finishing, Wrinkling, for machines for wrinkling paper sheets.

3. APPARATUS AND APPLIANCES, IMITATION FLOWER MAKING, STEMS AND VINES. Apparatus for producing floral strands and vine structures. Frequently natural evergreens and the like are employed in preparing an imitation vine.

4. APPARATUS AND APPLIANCES, PAINTERS'. Apparatus not elsewhere provided for employed in the application of colors.

Search Classes—

8—BLEACHING AND DYEING, for apparatus for dyeing fibers and fabrics; 91, COATING, for apparatus for spreading a continuous or haphazard coating, and 101, PRINTING, for apparatus for applying designs by means of printing surfaces and stencils.

15—BRUSHING AND SCRUBBING, for paint brushes.

33—DRAFTING, subclass 16, Perspectographs, for appliances employed in drawing perspectives.

45—FURNITURE, subclass 129, Easels, for painters' easels, including combinations of folding easels and chairs and easels and cabinets; also attachments for easels in the nature of trays, receptacles, and supports, but not for rotatable chucks for clamping china and the like articles while being painted; subclass 69, Desks, Portable, for small portable desks when the only feature that distinguishes it from a writing desk is an easel attached to the back for holding the design to be copied; subclass 130, Fabric stretching frames, Painters', for frames for holding the canvas stretched for receiving the colors.

81—TOOLS, subclass 4, Special, Engravers' clamps, for clamps for holding articles to be engraved.

120—STATIONERY, subclass 23, Scholars' companions, for special receptacles for holding pencils, pens, and the like, which are somewhat similar to "artists' kits"; and 206, SPECIAL RECEPTACLES AND PACKAGES, for other special receptacles.

224—PACKAGE AND ARTICLE CARRIERS, for devices for carrying freshly painted pictures.

5. APPARATUS AND APPLIANCES, PAINTERS', PALETTES AND MIXING PLATES. Devices upon which artists prepare and hold the colors while working. Also includes attachments for palettes.

Search Class—

41—ORNAMENTATION, subclass 4, Apparatus and appliances, Painters', for palettes modified in shape to fit a "kit"; also for packages holding cakes of paint, usually water colors.

6. APPARATUS AND APPLIANCES, PAINTERS', MIXING CHARTS. Charts for guidance in mixing colors.

Search Class—

88—OPTICS, subclass 14, Testing instruments, for charts for testing the optical effect of various colors.

7. APPARATUS AND APPLIANCES, METALLIC LEAF APPLYING. Apparatus for applying metallic leaf or like decorative films.

Search Class—

216—LABEL PASTING AND PAPER HANGING, for analogous mechanical structure.

CLASS 41—Continued.

8. APPARATUS AND APPLIANCES, METALLIC LEAF APPLYING, MAGAZINE HAND TOOLS. Hand tools holding a supply of film which is delivered as applied.

Search Classes—

206—SPECIAL RECEPTACLES AND PACKAGES, subclass 71, Packages, Metallic leaf, for packages containing metallic leaf.

216—LABEL PASTING AND PAPER HANGING, subclass 20, Machines, Strip, for analogous mechanical structure.

9. APPARATUS AND APPLIANCES, ETCHING. Apparatus employed in ornamenting and in producing designs on mineral substances by surface removal through chemical agents and without electricity.

Search Class—

148—ANNEALING AND TEMPERING, subclass 42, Pickling and swilling, for various machines for applying chemicals to the surface of metal.

10. ORNAMENTAL FORMS. Ornamental bodies other than substantially flat panels or surface decorations and processes of making the same not elsewhere classifiable. Does not include the surface ornamentation of an ornamental form when not involving features peculiar to the structure of the form. Does not include useful objects of peculiar form, but includes ornamental forms mounted on such objects when the object is conventional.

Search Classes—

41—ORNAMENTATION, subclasses 24, Surface type, Relief and intaglio and 25, Surface type, Relief and intaglio, Reproducing, for ornamentation of a surface nature, but which presents outstanding features, including some surface preparation of statues and the like; subclass 34, Surface type, Applied objects, for the application of bodies to a surface; also subclass 32, Surface type, Pigment, Plaques and surfaces, for ornamental plaques designed to receive a painting.

2—APPAREL, subclass 187, Trimmings, and subclasses thereunder, for ornaments such as are usually sewed onto clothing and the like.

20—WOODEN BUILDINGS, for ornamental building structure, especially subclasses 15, Panels and wainscoting; 73, Mantels; 74, Moldings, and 77, Ceiling center pieces.

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 113, Buttons and fasteners, Covers, for ornamental button structure.

40—CARD, PICTURE, AND SIGN EXHIBITING, for signs, picture frames, and exhibition devices, many of which include quite ornamental structure.

45—FURNITURE, subclasses 105, Screens, and 106, Screens, Folding, for ornamental screens.

46—GAMES AND TOYS, for ornamental toys; also for panoramic pictures and those with moving parts.

47—TREES, PLANTS, AND FLOWERS, for ornamental flower holders capable of holding moisture.

54—HARNESSES, subclasses 75, Trimmings, Covered, and 76, Trimmings, Ornamental, for harness ornaments.

58—HOROLOGY, subclass 88, Watches, Cases, for watch case structure including some ornamental features.

59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 80, Chains, Ornamental, and the subclasses thereunder, for ornamental chain structure.

63—JEWELRY, for ornaments to be worn on the person, composed of precious metal and stones or imitations of the same, but not, however, for comparatively cheap trimmings, such as used by milliners, in the nature of artificial flowers and the like.

65—KITCHEN AND TABLE ARTICLES, for ornamental napkin holders and articles of table ware.

72—MASONRY AND CONCRETE STRUCTURES, subclass 125, Plastering, Plaster boards, Ornaments, for ornaments especially designed to be used with plastering or as a substitute therefor.

85—DRIVEN, HEADED, AND SCREW THREADED FASTENINGS, subclasses 52, Washers, Ornamental, and 53, Ornamental heads, and the subclasses thereunder, for ornaments particularly designed to be used with nails and other fastening devices of that type.

116—SIGNALS, subclass 12, Flagstuffs, for flags and flagstuffs.

120—STATIONERY, subclass 82, Paper weights, for ornamental paper weights.

125—STONE WORKING, subclass 15, Monuments, for monuments, usually of ornamental design.

126—STOVES AND FURNACES, subclass 219, Stove lids and tops, Heating Stove, Ornaments and urns, for ornamental stove tops.

139—WEAVING, subclass 10, Fringes, for ornamental fringes.

156—CURTAINS, SHADES, AND SCREENS, for ornamental curtain attachments, especially subclasses 33, Curtain holders, and 40, Curtain tassels.

165—DESIGNS.

189—METALLIC BUILDING STRUCTURES, for ornamental metallic building structures, especially subclasses 82, Grilles, Composite, and 83, Grilles, Integral.

215—BOTTLES AND JARS, subclass 79, Bottles, Nesting, for ornamental arrangement of glass bottles.

231—WHIPS AND WHIP APPARATUS, subclass 6, Whips, Caps, buttons, and joints, for somewhat ornamental rings, buttons, and the like, especially designed for whips.

CLASS 41—Continued.

240—ILLUMINATION, subclass 10, Decorative lights, and the subclasses under 108, Shades, especially subclass 109, Shades, Canopy, for ornamental forms to be used with lights.

11. ORNAMENTAL FORMS, COLLAPSIBLE. Ornamental forms the parts of which are designed to be brought close together so as to occupy less space.

Search Classes—

41—ORNAMENTATION, subclass 15, Ornamental forms, Imitation trees, for knockdown imitation trees.

12. ORNAMENTAL FORMS, FLORAL. Frames or structures upon which flowers or foliage, natural or artificial, may be secured in order to produce a design.

Search Classes—

27—UNDERTAKING, subclass 2, Burial apparatus, for structures which may have flowers secured thereon and designed to be used in covering the open grave.

47—TREES, PLANTS, AND FLOWERS, especially subclass 18, Flower holders, for devices for holding flowers, which are capable of holding moisture.

13. ORNAMENTAL FORMS, IMITATION FLOWERS. Imitation flowers, fruit, and foliage. May be in part composed of natural elements. Includes processes for producing imitation flowers not elsewhere classifiable.

Search Class—

41—ORNAMENTATION, subclass 2, Apparatus and appliances, Imitation flower making, and the subclasses thereunder, for apparatus for producing imitation flowers.

14. ORNAMENTAL FORMS, IMITATION FLOWERS, SPECIAL FEATURES. Imitation flowers having concealed or other special features.

Search Classes—

41—ORNAMENTATION, subclass 11, Ornamental forms, Collapsible, for collapsible imitation floral decorations.

63—JEWELRY, subclass 31, Gem settings, Movable, for vibrating gem settings and the like.

15. ORNAMENTAL FORMS, IMITATION TREES. Built up tree structure.

16. ORNAMENTAL FORMS, IMITATION FEATHERS. Built up feathers, as distinguished from natural growth.

Search Classes—

15—BRUSHING AND SCRUBBING, subclass 28, Brush heads and faces, Dusting brushes, for feathers prepared for dusting brushes.

54—HARNESSES, subclass 76, Trimmings, Ornamental, for plumes such as are used to decorate harness.

17. SURFACE TYPE. Inventions not elsewhere classifiable relating to the ornamentation of surfaces. Includes ornamental panels and substantially flat decorations, even when the invention is not confined strictly to the surface. If the ornamentation is of the latter type and the structure involved is part of an ornamental form, such as referred to in subclass 10, Ornamental forms, and the search notes thereunder, the patent is placed in the subclass in which the ornamental form is classified.

Note.—Commercial fabrics and machine operations of preparing and treating them are usually provided for elsewhere.

Note.—Methods of applying letters to signs when strictly of a surface nature—such as painting, etching, and the like—are classifiable herein.

Search Classes—

2—APPAREL; 112, SEWING MACHINES, and 223, APPAREL APPARATUS, for the ornamenting of cloth by sewing, embroidering, and other methods of introducing threads into finished fabrics; 26, CLOTH FINISHING, subclass 2, Finishing, for methods of mechanically ornamenting the surface of cloth, which can be performed by running the web through a machine, but not including embossing or the introduction of threads in the nature of sewing, embroidery, and the like.

18—PLASTICS, for methods of incorporating decorative material in the surface of a plastic object.

92—PAPER MAKING AND FIBER LIBERATION, subclass 68, Finishing, and the subclasses thereunder, for mechanical methods of ornamenting paper webs, not including embossing.

Note.—For further information see the search notes of the more specific subclasses.

18. SURFACE TYPE, MISCELLANEOUS METALLIC. Ornamentation on metal or with metal when not falling in any of the more specific subclasses of this class or in other classes.

Search Classes—

41—ORNAMENTATION, subclass 38, Surface type, Removing portions of coating, for inventions involving plating with metal before or after removing a portion of the plating.

91—COATING, the subclasses specially provided for coating with metal, for methods not involving steps for the production of a design.

159—ENGRAVING, for ornamentation with cutting tools.

201—METAL ORNAMENTATION, for ornamenting the surface of metal by mechanical impression.

204—ELECTROCHEMISTRY, for metallic ornamentation by electrochemical action.

19. SURFACE TYPE, STRIATED EFFECTS. Surfaces provided with close-lying substantially parallel lines or ridges, so that peculiar light effects are produced.

Search Classes—

88—OPTICS, subclass 60, Building lights, Window, for striated glass panes.

CLASS 41—Continued.

240—ILLUMINATION, subclasses 103, Reflectors, and 106, Refractors, for like structure limited to use with artificial light.

20. SURFACE TYPE, TRANSFORMATION EFFECTS. Designs which show different effects under different conditions.

Search Classes—

41—ORNAMENTATION, subclass 19, Surface type, Striated effects, for changes due to close-lying striations.

11—BOOKBINDING, subclass 13, Bank notes, checks, and bonds, for negotiable paper which changes under certain conditions.

40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 137, Signs, Variable reading, for signs of this type.

48—GAMES AND TOYS for designs having moving parts or designs of which portions are formed somewhat in the nature of fireworks.

134—LIQUID COATING COMPOSITIONS, subclass 29, Ink, Sympathetic, for ink which is particularly adapted for transformation purposes.

21. SURFACE TYPE, DIAPHANOUS. Ornamental panels and surfaces other than mosaic capable of transmitting light. Does not include open-work structure, such as grilles, lace, and the like; nor does it include surface ornamentation of glass and transparent materials by etching, abrading, painting, and the like when the diaphanous feature is not involved.

Search Classes—

41—ORNAMENTATION, subclasses 19, Surface type, Striated effects, for diaphanous effects of that nature; 28, Surface type, Pigment, Treating photographs, Clearing feature, for transparent photographs mounted on glass and the like, and 38, Surface type, Removing portions of coating, for methods of producing open-work designs on transparent materials by removing portions of an opaque covering.

40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 130, Signs, Illuminated, and the subclasses thereunder, for diaphanous signs, and subclass 147, Picture stands and supports, Illuminators, for picture supports having like features.

49—GLASS, especially subclass 92, Structure, when the ornamentation is prepared during the manufacture of the glass.

240—ILLUMINATION, subclasses 10, Decorative lights, and 108, Shades, and the subclasses thereunder, especially 109, Shades, Canopy for diaphanous ornamental attachments.

22. SURFACE TYPE, DIAPHANOUS FACE, OPAQUE BACKING. Ornamentation in which the face layer is diaphanous and is placed or designed to be placed against an opaque backing. Merely coating an opaque design with transparent varnish or glaze is not included.

Search Classes—

41—ORNAMENTATION, subclass 28, Surface type, Pigment, Treating photographs, Clearing feature, for transparent photographs mounted on an opaque backing, and subclass 36, Surface type, Applied objects, Particles, for transparent beads and the like attached to an opaque backing.

40—CARD, PICTURE, AND SIGN EXHIBITING, subclasses 124.5, Memorial tablets; 134, Signs, Illuminated, Luminous paint; 135, Signs, Multiple layers, and 141, Signs, Interchangeable letters, Glass, for signs of this type.

120—STATIONERY, subclass 82, Paper weights, for analogous structure.

23. SURFACE TYPE, MOSAIC. Continuous surface produced by securing solid pieces of material in position with their edges adjoining not provided for elsewhere. It is mostly confined to ornamental glass panels. Does not include methods of laying tile floors, walls, and roofs unless limited to a method of arranging a mosaic design, which would be of general application.

Search Classes—

18—PLASTICS, for processes involving also a molding operation.

20—WOODEN BUILDINGS; 108, ROOFS, and 73, MASONRY AND CONCRETE STRUCTURES, for the laying of tiles and the like in building construction.

29—METAL WORKING, subclass 181, Metal stock, Compound, for metal stock of this type.

154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 26, Linoleum making, Processes, Inlaid, for process of preparing mosaic-like linoleum.

183—METALLIC BUILDING STRUCTURES, subclass 77, Windows, Sash, Pane supports and fastenings, for leaded and other metallic structure for holding mosaic glass structure in place.

240—ILLUMINATION, especially subclasses 10, Decorative lights, and 109, Shades, Canopy, for light attachment of a mosaic character.

24. SURFACE TYPE, RELIEF AND INTAGLIO. Ornamentation in which portions lie above or below the ground. If falling in this class, the invention usually involves hand methods. Placing the material in a mold or running it through a machine is usually provided for elsewhere.

Search Classes—

41—ORNAMENTATION, subclasses 19, Surface type, Striated effects, for small raised parallel ridges; 30, Surface type, Pigment, Filled recesses, for recesses partly filled with coloring matter, thereby leaving intaglio features; 34, Surface type, Applied objects, for objects applied to a surface and standing out therefrom; 37, Surface type, Applied objects, Metallic leaf, for leaf applied with a stamp which may have relief or intaglio features, and 38, Surface type, Removing portions of coating, for slight recesses left by the removed portions.

18—PLASTICS, especially subclass 35, Molding devices, Molds, Sheet shaping, for molds designed to be used for embossing photographs and process subclasses for methods of facing which involve a molding operation.

40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 136, Signs, Embossed, molded, rolled, or stamped, for signs of this character.

CLASS 41—Continued.

101—PRINTING; 113, SHEET METAL WARE, MAKING; 144, WOOD WORKING; 149, HIDES, SKINS, AND LEATHER; 153, METAL BENDING; 154, LAMINATED FABRIC AND ANALOGOUS MANUFACTURES; 198, MATRIX MAKING, and 201, METAL ORNAMENTING, for machine embossing operations.

159—ENGRAVING, for the engraving of this type of surface.

25. SURFACE TYPE, RELIEF AND INTAGLIO, REPRODUCING. The reproducing of relief or intaglio surfaces when not provided for elsewhere, usually methods employed by a sculptor in reproducing figures. Includes the preparation of masks of faces and the like.

Search Class—

73—MEASURING INSTRUMENTS, subclass 73, Conformators, for instruments used for measuring contours.

26. SURFACE TYPE, PIGMENT. The application of coloring material by operations not elsewhere classifiable. Inventions found here are usually in the nature of hand methods or design decorations which are not particularly adapted to be produced by machines. Conventional shading or coloring of an ornamental effect falling in some other specific subclass of this class does not place the patent in this subclass.

Search Classes—

41—ORNAMENTATION, subclasses 4, Apparatus and appliances, Painters', and the subclasses thereunder, for appliances to be employed in this character of work; 38, Surface type, Removing portions of coating, for methods of ornamentation by removing portions of a colored surface, and 33, Surface type, Transfers, for methods of transferring previously formed pigment designs.

2—APPAREL, subclass 147, Trimmings, Embroidery, for combination of colored and embroidery ornamentation.

6—BLEACHING AND DYEING, for the dyeing of fabric and the like;

91, COATING, for coating not limited to steps for the production of a definite design and including, under subclass 67.9, Fabric coating and printing, the production of serviceable fabrics by the combination of coating and printing or embossing operations, and 101, PRINTING, for the application of designs to surfaces by means of type, stencils or planographic surfaces, including in subclasses 28, Color machines, Graining, and 181, Imitating, special methods of imitating natural, woven, and other surfaces.

11—BOOK BINDING, subclass 13, Bank notes, checks, and bonds, for surface preparation peculiar to negotiable paper.

18—PLASTICS, for introduction of coloring matter into the surface of pyroxylin and vulcanizable gums by methods peculiar to those materials and for processes which involve molding or the facing of a plastic while green; 72, MASONRY AND CONCRETE STRUCTURES; 94, PAVING, for the introduction of coloring matter into the surface of cement and the like substances during the molding of the material, and 107 BREAD, PASTRY, and CONFECTION MAKING, for coloring peculiar to confectionery and the like.

27. SURFACE TYPE, PIGMENT, TREATING PHOTOGRAPHS. The coloring of photographs and other previously formed pictures not provided for elsewhere. Also includes mounting the colored picture on a backing.

Search Classes—

95—PHOTOGRAPHY, for methods of coloring photographs unique to that art.

101—PRINTING, subclasses 159, Surfaces, Multicolor, and 162, Surfaces, Tintographs, for printing surfaces adapted for this type of work.

28. SURFACE TYPE, PIGMENT, TREATING PHOTOGRAPHS, CLEARING FEATURE. Coloring photographs and pictures by methods which involve the step of rendering them substantially transparent or in which a transparent picture is employed, usually so that they may be colored from the back. Includes rendering pictures transparent when no coloring is mentioned.

29. SURFACE TYPE, PIGMENT, MASKING. Applying coloring material to a surface partially covered by a mask, either in the nature of a substance which may be washed off or removed after the color has been applied or which will not take the color. Does not include stenciling in which permanent plates are used. Does not include printing and dyeing operations in which a portion of the material treated is protected in this manner. Does not include novel methods of coating a surface such as would fall in class 91, COATING, but in which a pattern is applied in a conventional manner to a portion of the surface.

30. SURFACE TYPE, PIGMENT, FILLED RECESSES. Filling recesses formed in a surface wholly or in part with coloring matter.

Search Class—

144—WOOD-WORKING, subclasses 272, Wood ornamenting, Embossing, and the subclasses thereunder, and 275, Wood ornamenting, Graining, for the coloring of recesses incidental to the embossing and graining of wood.

31. SURFACE TYPE, PIGMENT, FILLED RECESSES, APPLIED OUTLINES. Applying or building up bands or divisions on a surface and filling the recesses thus formed with coloring matter. Usually known as "cloisonné work."

32. SURFACE TYPE, PIGMENT, PLAQUES AND SURFACES. Surfaces such as canvases, panels, plaques, and the like specially prepared or designed to receive pigment ornamentation. Does not include mere coating and impregnating methods.

CLASS 41—Continued.

Search Class—

40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 158, Picture frames, Mats, mounts, and backs, for plaques constructed to hold cards or pictures.

33. SURFACE TYPE, TRANSFERS. Preparing designs or shapes in pigments or analogous materials upon a temporary support and securing the material thus formed to a permanent ground before detaching the temporary support.

Search Class—

101—PRINTING, for methods of transferring fluid designs to a ground in which no special manipulation or preparation for releasing the entire body of fluid is involved; also subclass 163, Surfaces, Elastic, for sheet construction similar to transfer sheets employed in this subclass; also subclass 166, Surfaces, Mechanical transferring and registering, for machine methods of manipulating and regulating a transfer sheet, in preparing a printing surface.

34. SURFACE TYPE, APPLIED OBJECTS. Ornamentation of surfaces by applying solid objects not provided for elsewhere.

Search Classes—

41—ORNAMENTATION, subclasses 10, Ornamental forms, or the subclasses thereunder, for ornamental objects which are not designed to lie on a surface, but which are in some instances mounted on other objects; 21, Surface type, Diaphanous; 22, Surface type, Diaphanous face, Opaque backing; 23, Surface type, Mosaic; 31, Surface type, Pigment, Filled recesses, Applied outlines; 33, Surface type, Transfers, and 38, Surface type, Removing portions of coating, for features somewhat of this nature, but peculiar to the types contained in those subclasses and usually not cross-referenced here.

2—APPAREL, subclass 187, Trimmings, for cloth ornamented by means of objects sewed thereon.

40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 140, Signs, Interchangeable letters, and the subclasses thereunder, for letters to be applied to signs; subclasses 124.5, Memorial tablets, and 152, Picture frames, and the subclasses thereunder, for picture retainers which are sometimes mounted on other objects.

46—GAMES AND TOYS, especially subclass 40, Toys, Figure, for pictures of figures having portions of clothing or other appropriate objects secured thereon in such a manner that portions of the object are capable of movement.

69—LEATHER MANUFACTURES, subclass 21, Articles and processes, for leather ornamented by attached leather objects.

85—DRIVEN, HEADED, AND SCREW THREADED FASTENINGS, subclass 52, Washers, Ornamental, for ornamental washers to be used with nails, screws, or the like.

211—STORE FURNITURE, subclass 34, Display cards, for objects attached to cards in the nature of samples.

231—WHIPS AND WHIP APPARATUS, subclass 6, Whips, Caps, buttons, and joints, for ornamental rings and the like for whips.

35. SURFACE TYPE, APPLIED OBJECTS, INLAID. Applying solid objects in such a manner that a portion of the object lies below the ground.

Search Classes—

41—ORNAMENTATION, subclass 37, Surface type, Applied objects, Metallic leaf, for leaf decoration which may involve this feature.

18—PLASTICS, especially subclass 59, Processes, Molding, Uniting; 72, MASONRY AND CONCRETE STRUCTURES, and 94, PAVING, for methods of inlaying objects in soft or softened plastic materials, and 49, GLASS, especially subclass 81, Processes, Uniting parts, for methods of incorporating objects in the soft glass.

20—WOODEN BUILDINGS, especially subclass 75, Mosaics and inlaying, and 144, WOOD-WORKING, especially subclass 277, Wood ornamenting, Processes, for methods of inlaying wood in wood.

29—METAL-WORKING, especially subclasses 148, Blanks and processes, and the subclasses thereunder, and 189, Metal stock, Processes, Compound plate, for methods of inlaying metal in metal.

40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 124.5, Memorial tablets, for tablets inlaid in monuments and the like.

63—JEWELRY, subclass 26, Gem settings, and the subclasses thereunder, for gems and jewels set into objects.

36. SURFACE TYPE, APPLIED OBJECTS, PARTICLES. Small particles, flakes, globules, and the like applied to the surface.

Search Classes—

2—APPAREL, subclass 187, Trimmings, and 223, APPAREL APPARATUS, subclass 52, Trimmings, Making, for methods of ornamenting fabrics by sewing beads and the like thereon.

91—COATING, for methods of covering a surface by flocking, sanding, and the like.

37. SURFACE TYPE, APPLIED OBJECTS, METALLIC LEAF. Inventions relating to ornamentation by the use of metallic leaf.

Search Classes—

41—ORNAMENTATION, subclass 7, Apparatus and appliances, Metallic leaf applying, and the subclasses thereunder, for apparatus for applying leaf.

206—SPECIAL RECEPTACLES AND PACKAGES, subclass 71, Packages, Metallic leaf, for packages of leaf.

38. SURFACE TYPE, REMOVING PORTIONS OF COATING. Effects produced by removing portions of a coating or covering, so that the ground is exposed.

CLASS 41—Continued.**Search Class—**

41—ORNAMENTATION, subclasses 35, Surface type, Applied objects, Inlaid, for somewhat similar features employed in producing inlaid work; 43, Surface type, Chemical, Etching, Resist preparation; 44, Surface type, Chemical, Etching, Resist preparation, Photographic, and 46, Surface type, Mechanical negatives, for the preparation of surfaces by removing portions of coating as a preliminary step in other operations.

39. SURFACE TYPE, ABRADED AND ROUGHENED. Ornamentation by roughening a portion of the surface. Does not include engraving.

Search Classes—

41—ORNAMENTATION, subclasses 41, Surface type, Chemical, or the subclasses thereunder, when the roughing is limited to chemical methods, and 38, Surface type, Removing portions of coating, when abrading is employed in removing coating.

51—GRINDING AND POLISHING, for sand blast and other abrading apparatus.

40. SURFACE TYPE, ABRADED AND ROUGHENED, CHIPPING WITH ADHESIVE. Chipping a surface, usually glass, by applying an adhesive which in drying contracts and detaches small particles from the surface.

41. SURFACE TYPE, CHEMICAL. Ornamental effects produced by chemical action not provided for in other classes. Does not include chemical deposition of metal when not combined with other features.

Search Classes—

2—APPAREL, subclass 147, Trimmings, Embroidery, for the use of chemicals for destroying threads in preparing embroidery work.

8—BLEACHING AND DYEING, for chemical methods of dyeing fabrics and the like.

18—PLASTICS, subclasses 50, Processes, Miscellaneous, Vulcanizable gums, Caoutchouc, and 51, Processes, Miscellaneous, Pyroxylin, for chemical ornamental changes peculiar to rubber and celluloid.

CLASS 41—Continued.

42. SURFACE TYPE, CHEMICAL, ETCHING. Ornamenting and producing designs on mineral substances by surface removal with chemical agents when not involving the use of electricity. Includes processes of applying the reagent if not falling in subclass 45, Surface type, Chemical, Etching, Designs without resist.

Search Classes—

41—ORNAMENTATION, subclass 9, Apparatus and appliances, Etching, for apparatus employed in this art.

101—PRINTING, subclasses under "Surfaces," for methods of preparing printing surfaces by etching, which involve special features that distinguish them from etching ornamental effects. This does not apply to photographic methods..

43. SURFACE TYPE, CHEMICAL, ETCHING, RESIST PREPARATION. The preparation of a resist to protect a portion of the surface from the action of the agent. If the resist is described as capable of use in etching, it should be placed herein, even though it may be used for other protective purposes.

44. SURFACE TYPE, CHEMICAL, ETCHING, RESIST PREPARATION, PHOTOGRAPHIC. Preparing the resist by the action of light.

Search Class—

101—PRINTING, subclasses 204, Surfaces, Planographic, Photo-mechanical, and 205, Surfaces, Relief and intaglio, Photomechanical, for the preparation of printing surfaces.

45. SURFACE TYPE, CHEMICAL, ETCHING, DESIGNS WITHOUT RESIST. Inventions leading to the production of a design by an etching agent without the use of a resist.

46. SURFACE TYPE, MECHANICAL NEGATIVES. The mechanical preparation of plates which are designed to be used in printing by the action of light.

CLASS 42.—FIREARMS.

DEFINITIONS.

Class.

This class includes all the lighter firearms which are supported by hand when operated, as shoulder-guns, pistols, revolvers, toy firearms, cane-guns, and such implements, as bayonets, pistolswords, gun-barrel cleaners, ramrods, intrenching devices, etc., which are usually attached to the arm. Some gun-rests adapted to be attached to an ordinary shoulder-gun, some body-supported arm-rests, and some shell and load extracting implements are also here classified.

The heavier-mounted guns are found in class 89, ORDNANCE.

Subclasses.

1. MISCELLANEOUS. Firearms and accessories not classifiable in any of the other subclasses.
2. BREECH-LOADING. Miscellaneous firearms adapted for loading at the breech. The subclasses under this title, except those of the automatic, the spring-motor guns, and the grip-magazine pistols, are based on the movements of the breech-block or barrel in opening the breech. Features of magazine structure may be found in any of the magazine subclasses.
3. BREECH-LOADING, AUTOMATIC, GAS-OPERATED. The force of expansion of the gases of discharge is used to open the breech, extract and eject the shells, insert a fresh load from the magazine, close the breech, and cock the piece. The breech is usually opened by the breech-block sliding rearward or the barrel forward.
4. BREECH-LOADING, AUTOMATIC, RECOIL-OPERATED. The force of recoil is utilized to open the breech, extract and eject the empty shell, insert a fresh cartridge from the magazine, close the breech, and cock the piece. In this class of guns the breech-block usually slides rearward to open the breech, or both barrel and breech-block slide rearward and the barrel returns to its forward or firing position in advance of the return of the block.
5. BREECH-LOADING, SPRING-MOTOR OPERATED. Firearms in which a spring, which is wound up, is utilized to furnish the power for opening the breech, usually by sliding the breech-block rearward, ejecting the shell, reloading, and closing the breech. Usually one winding of the spring is sufficient for a magazine full of cartridges.
6. BREECH-LOADING, MAGAZINE. Miscellaneous breech-loading magazine-guns not classifiable in any of the other subclasses of magazine-guns.
Search Class—
42—FIREARMS, subclasses 3, Breech-loading, Automatic, Gas-operated; 4, Breech-loading, Automatic, Recoil-operated; 5, Breech-loading, Spring-motor operated, and 7, Breech-loading, Grip-magazine pistols.
7. BREECH-LOADING, GRIP-MAGAZINE PISTOLS. The magazine is placed in the handle or grip of the pistol. Usually the breech-block slides rearward or the barrel forward to open the breech.
8. BREECH-LOADING, BREECH-HINGED BARREL. "Break-down" guns in which the hinge is located at the breech.
9. BREECH-LOADING, FAUCET BREECH-BLOCK. The breech-block turns about a central fixed axis, like a faucet, to open and close the breech. The charge is sometimes received in this block and there retained when fired. In other cases the block closes the breech containing the charge.
10. BREECH-LOADING, FORWARD-SLIDING BARREL. The barrel slides forward to open the breech.
Search Class—
42—FIREARMS, subclasses 3, Breech-loading, Automatic, Gas-operated, and 7, Breech-loading, Grip-magazine pistols.
11. BREECH-LOADING, FORWARD-SLIDING BARREL, MAGAZINE. Magazine-guns in which the barrel slides forward to open the breech, this movement also operating to reload the gun from the magazine.
Search Class—
42—FIREARMS, subclasses 3, Breech-loading, Automatic, Gas-operated, and 7, Breech-loading, Grip-magazine pistols.
12. BREECH-LOADING, SIDE-SWINGING BARREL. The barrel, to open the breech, is made to swing to one side.
13. BREECH-LOADING, SIDE-SWINGING BARREL, PARALLEL PIVOT. The barrel, to open the breech, is made to swing to one side on a pivot, or axis parallel to the length or axis of the barrel.

CLASS 42—Continued.

14. BREECH-LOADING, SLIDING BREECH-BLOCK. The breech-block is made to slide in guides to open or close the breech.
15. BREECH-LOADING, SLIDING BREECH-BLOCK, MAGAZINE. Magazine-guns having a sliding breech-block.
16. BREECH-LOADING, SLIDING BREECH-BLOCK, REARWARD. The breech-block, in opening the breech, is made to slide rearward substantially in line with the barrel.
Search Class—
42—FIREARMS, subclasses 3, Breech-loading, Automatic, Gas-operated; 4, Breech-loading, Automatic, Recoil-operated; 5, Breech-loading, Spring-motor operated, and 7, Breech-loading, Grip-magazine pistols.
17. BREECH-LOADING, SLIDING BREECH-BLOCK, REARWARD, MAGAZINE. Magazine-guns having a breech-block made to slide rearward substantially in line with the gun-barrel.
Search Class—
42—FIREARMS, subclasses 3, Breech-loading, Automatic, Gas-operated; 4, Breech-loading, Automatic, Recoil-operated; 5, Breech-loading, Spring-motor operated, and 7, Breech-loading, Grip-magazine pistols.
18. BREECH-LOADING, SLIDING BREECH-BLOCK, REARWARD, MAGAZINE, BOX. The magazine is of the side-feeding or "box" type.
Search Class—
42—FIREARMS, subclasses 3, Breech-loading, Automatic, Gas-operated; 4, Breech-loading, Automatic, Recoil-operated; 5, Breech-loading, Spring-motor operated, and 7, Breech-loading, Grip-magazine pistols.
19. BREECH-LOADING, SLIDING BREECH-BLOCK, REARWARD, MAGAZINE, ROTARY. Firearms in which a rotary magazine, like a revolver-cylinder, is employed to bring the cartridges successively to position in line with the breech, where they are pushed into the barrel by the returning breech-block. In revolvers the cartridges are retained in the cylinder when fired.
Search Class—
42—FIREARMS, subclass 59, Revolvers.
20. BREECH-LOADING, SLIDING BREECH-BLOCK, REARWARD, PIVOTED HAMMER. Guns of this type in which a pivoted hammer is employed to strike the charge or a firing-pin which transmits the blow to the charge.
Search Class—
42—FIREARMS, subclasses 3, Breech-loading, Automatic, Gas-operated; 4, Breech-loading, Automatic, Recoil-operated; 5, Breech-loading, Spring-motor operated, and 7, Breech-loading, Grip-magazine pistols.
21. BREECH-LOADING, SLIDING BREECH-BLOCK, REARWARD, PIVOTED HAMMER, MAGAZINE. Magazine-guns of the type in the preceding subclass.
22. BREECH-LOADING, SLIDING BREECH-BLOCK, REARWARD, PIVOTED HAMMER, MAGAZINE, BOX. Magazine-guns with this breech-block movement which have the side-feeding or "box" magazine.
Search Class—
42—FIREARMS, subclasses 3, Breech-loading, Automatic, Gas-operated; 4, Breech-loading, Automatic, Recoil-operated; 5, Breech-loading, Spring-motor operated, and 7, Breech-loading, Grip-magazine pistols.
23. BREECH-LOADING, SLIDING BREECH-BLOCK, VERTICAL MORTISE. The breech-block, in opening the breech, slides vertically in a mortise.
24. BREECH-LOADING, SLIDING BREECH-BLOCK, VERTICAL MORTISE, MAGAZINE. Magazine-guns which have the breech-block fitted to slide in a vertical mortise.
25. BREECH-LOADING, SLIDING BREECH-BLOCK, REARWARD, EXTRACTORS. Shell-extracting devices pertaining to this type of gun.
26. BREECH-LOADING, SWINGING BREECH-BLOCK. The breech-block is hinged or pivoted and made to swing to open the breech.
27. BREECH-LOADING, SWINGING BREECH-BLOCK, MAGAZINE. Magazine-guns with a hinged or pivoted breech-block.
28. BREECH-LOADING, SWINGING BREECH-BLOCK, DOWNWARD AND REARWARD. The breech-block being pivoted at its rear end, its front end swings downward and to the rear to uncover the breech.

CLASS 42—Continued.

29. BREECH-LOADING, SWINGING BREECH-BLOCK, DOWNWARD AND REARWARD, MAGAZINE. Magazine-guns in which the breech-block is pivoted at its rear end, so its front end swings downward and to the rear.
30. BREECH-LOADING, SWINGING BREECH-BLOCK, Laterally FORWARD. The breech-block, pivoted at its forward end, swings outward and forward at its rear end to open the breech.
31. BREECH-LOADING, SWINGING BREECH-BLOCK, Laterally REARWARD. The breech-block is pivoted at its rear end, and its front end swings outward and to the rear to open the breech.
32. BREECH-LOADING, SWINGING BREECH-BLOCK, PARALLEL PIVOT. The breech-block, to open the breech, swings on a pivot or hinge which is parallel with the gun-barrel axis.
33. BREECH-LOADING, SWINGING BREECH-BLOCK, PARALLEL PIVOT, MAGAZINE. Magazine-guns in which the breech-block, to open the breech, swings on a pivot or hinge which is parallel to the gun-axis.
34. BREECH-LOADING, SWINGING BREECH-BLOCK, REARWARD AND DOWNWARD. The breech-block is pivoted below the gun-axis, and the upper part of the block, to open the breech, swings rearward and downward.
35. BREECH-LOADING, SWINGING BREECH-BLOCK, REARWARD AND DOWNWARD, MAGAZINE. Magazine-guns in which the breech-block, to open the breech, swings to the rear and downward.
36. BREECH-LOADING, SWINGING BREECH-BLOCK, UPWARD AND FORWARD. The breech-block is pivoted at its forward part, and, to open the breech, its rearward part swings upward and forward.
37. BREECH-LOADING, SWINGING BREECH-BLOCK, UPWARD AND FORWARD, MAGAZINE. Magazine-guns in which the breech-block is pivoted at its forward part and, to open the breech, swings the rearward part upward and forward.
38. BREECH-LOADING, SWINGING BREECH-BLOCK, UPWARD AND REARWARD. The breech-block is pivoted at the rear end, and, to open the breech, its forward end swings upward and to the rear.
39. BREECH-LOADING, SWINGING BREECH-BLOCK, UPWARD AND REARWARD, MAGAZINE. Magazine-guns in which the breech-block is pivoted at its rear end. To open the breech, its forward end swings upward and to the rear.
40. BREECH-LOADING, UPWARD-TILTING BREECH. The barrel is pivoted to the stock at a point in advance of the breech, and, to open the breech, the barrel swings on this pivot, the muzzle downward and breech upward. These are often styled "breakdown" guns.
41. BREECH-LOADING, UPWARD-TILTING BREECH, LOCKS. Guns of this type in which the improvement lies wholly in the lock or firing mechanism.
Search Class—
42—FIREARMS, subclasses 65, Revolvers, Locks, and 69, Locks.
42. BREECH-LOADING, UPWARD-TILTING BREECH, LOCKS, SINGLE-TRIGGER. The lock for two or more barrels on a single gun is adapted to be operated by a single trigger.
43. BREECH-LOADING, UPWARD-TILTING BREECH, LOCKS, COCKING DEVICES. In the breaking down of the gun or in closing the breech the hammer is cocked.
44. BREECH-LOADING, UPWARD-TILTING BREECH, BARREL-LOCKS. Devices for holding or locking the breech in the closed position.
45. BREECH-LOADING, UPWARD-TILTING BREECH, BARREL-LOCKS, HAMMER-COCKING. Barrel-locking devices which also operate to cock or partly cock the hammer.
46. BREECH-LOADING, UPWARD-TILTING BREECH, EXTRACTORS. Shell-extracting mechanism usually operated by the breakdown of the gun.
47. BREECH-LOADING, UPWARD-TILTING BREECH, EJECTORS. Mechanism, usually operated by the breakdown of the gun, for throwing out or ejecting the cartridge-shells.
48. BREECH-LOADING, UPWARD-TILTING BREECH, EJECTORS, HAMMER. The ejector is struck by an ejector hammer, usually in breaking down the gun, and thus throws out the cartridge shells.
49. BREECH-LOADING, MAGAZINES. The novelty resides solely in the gun-magazine.
Search Class—
42—FIREARMS, subclass 87, Magazine chargers, and subclasses thereunder.

CLASS 42—Continued.

50. BREECH-LOADING, MAGAZINES, BOX. The novelty resides solely in the magazine of the side-feeding or "box" type.
Search Class—
42—FIREARMS, subclass 88, Magazine-chargers, Packs, and subclasses thereunder.
51. MUZZLE-LOADERS. Firearms which can be loaded only through the muzzle.
52. CANE-GUNS. Walking-canes which are adapted also to be used as firearms.
53. PISTOL-SWORDS. Those pistols which combine therewith a sword or knife attachment.
54. TOY. Devices—such as toy pistols, cannon, etc.—made to imitate firearms and which either fire an explosive, like a cap or match, by means of some sort of a lock or which have a barrel in which an explosive is placed and fired. Liquid-throwing pistols are from analogy here included.
NOTE.—For such cap-exploding toys and fire-cracker holders as are not made in imitation of firearms search should be made in class 46, GAMES AND TOYS, subclass 46, Toys, Sounding. For such spring or air guns as in addition to projecting a missile, also explode a cap, search should be made in class 124, AIR-GUNS, CATAPULTS, AND TARGETS, subclasses 8, Guns, Air, and 12, Guns Spring.
55. TOY, CANNON. Devices made in imitation of cannon, mortars, etc., and adapted to hold an explosive charge, generally a fire-cracker. A projectile may or may not be used.
56. TOY, LIQUID-THROWING. Pistols adapted to throw a liquid a short distance.
Search Class—
128—SURGERY, subclass 25, Syringes.
57. TOY, RIBBON-FED. The device is adapted to receive a "ribbon" of the explosives or caps and feed this ribbon as the caps are successively exploded by the hammer.
58. TOY, REVOLVERS. The toy is made to imitate a revolver.
59. REVOLVERS. Pistols in which there is a revolving cylinder adapted to carry a plurality of loads and bring each load successively to firing position.
60. REVOLVERS, MAGAZINE-FED CYLINDER. The revolver carries a fixed magazine from which the cylinder is supplied or fed.
Search Class—
42—FIREARMS, subclass 19, Breech-loading, Sliding breech-block, Rearward, Magazine, Rotary.
61. REVOLVERS, MUZZLE-LOADERS. The cylinder can be loaded only from the forward end.
62. REVOLVERS, SWINGING-CYLINDER. The cylinder swings outward to reload, clean, etc.
63. REVOLVERS, HINGED-BARREL. Revolvers of the breakdown type.
64. REVOLVERS, HINGED-BARREL, BARREL-CATCHES. Devices for locking or holding the barrel in its closed or operative position.
65. REVOLVERS, LOCKS. Revolver locks or firing devices.
Search Class—
42—FIREARMS, subclasses 41, Breech-loading, Upward-tilting breech, Locks, and 69, Locks.
66. REVOLVERS, LOCKS, SAFETY DEVICES. Arrangements for preventing premature explosion of the charge.
Search Class—
42—FIREARMS, subclass 83, Nipples and guards.
67. REVOLVERS, LOCKS, CYLINDER-STOPS. Devices for checking the revolution of the cylinder and holding it during the firing.
68. REVOLVERS, SHELL-EXTRACTORS. Shell-extracting mechanism.
69. LOCKS. Miscellaneous subclass of gun-locks.
Search Class—
42—FIREARMS, subclasses 41, Breech-loading, Upward-tilting breech, Locks, and 65, Revolvers, Locks.
70. LOCKS, SAFETY. Those locks which have some sort of mechanism for preventing premature explosion.
Search Class—
42—FIREARMS, subclasses 41, Breech-loading, Upward-tilting breech, Locks; 65, Revolvers, Locks, and 69, Locks, for lock features aside from the safety devices.
71. STOCKS. The novelty resides solely in the stock or butt of the gun.
72. STOCKS, AUXILIARY. Additional or auxiliary stocks to be attached usually to pistol-handles to convert them into shoulder-guns.
73. STOCKS, ADJUSTABLE. Adjustably-attached stocks to permit varying the angle between the stock and barrel.

CLASS 42—Continued.

74. **STOCKS, CUSHIONED.** Rubber, spring, air, or other cushioned gun-butt to diminish the effect of the recoil or "kick" of the gun.
75. **STOCKS, STOCK AND BARREL FASTENINGS.** Arrangements for fastening the barrel and stock together.
Search Class—
42—FIREARMS, subclass 76, Barrels.
76. **BARRELS.** The barrel structure and means for uniting two or more barrels together.
Search Class—
42—FIREARMS, subclass 75, Stocks, Stock and barrel fastenings.
77. **BARRELS, AUXILIARY.** Barrels some of which are adapted to be placed within the usual barrel to make a rifle in place of a shotgun or for some other reason to reduce the usual bore; some barrels adapted to be placed by and removed from the side of the usual barrel to make a double-barreled gun or one with a shot and also a rifle barrel.
Search Class—
89—ORDNANCE, subclass 29, Practice-barrels.
78. **BARRELS, RIFLING.** Gun barrels in which the novelty resides in the rifling. This subclass includes rifling for heavy ordnance as well as for the lighter firearms.
79. **BARRELS, CHOKE DEVICES.** Gun muzzle constructions or muzzle attachments designed to prevent the shot scattering when the charge leaves the gun.
80. **SIGHTS.** Sight mountings, adjustments, etc.
Search Classes—
89—ORDNANCE, subclass 32, Sights.
88—OPTICS, for lens arrangements and structures involving features of optics and optical instruments.
81. **SIGHTS, REFLECTORS AND ILLUMINATORS.** Various arrangements for reflecting the light upon or illuminating by artificial light the gun-sights or the object at which the gun is aimed.
82. **SIGHTS, VERTICALLY-ADJUSTABLE.** Those adapted for vertical adjustment for different distances.
Search Class—
89—ORDNANCE, subclass 32, Sights.
83. **NIPPLES AND GUARDS.** Nipple structures and also guards either carried by the stock or by the hammer and adapted to prevent the hammer prematurely striking the nipple.
Search Class—
42—FIREARMS, subclass 66, Revolvers, Locks, Safety devices.
84. **ELECTRICAL APPLIANCES.** Principally electric firing devices. Some alarms for indicating when guns of the "hammerless" type are set at "unsafe."
Search Class—
42—FIREARMS, subclass 81, Sights, Reflectors and illuminators, for electric-lighting devices for gun-sights.

CLASS 42—Continued.

85. **GUN-TRIMMINGS.** Bands, clips, hooks, etc., for sling-strap attachment, gun-stacking, and ram or wiper rod attachment.
86. **BAYONETS.** Gun-bayonets of various kinds.
Search Class—
42—FIREARMS, subclass 93, Implements, Intrenching, for digging devices adapted to be attached to gun-bayonets.
87. **MAGAZINE-CHARGERS.** Devices for temporarily holding a series of cartridges or gun charges and inserting them in the gun-magazine.
Search Class—
42—FIREARMS, subclass 49, Breech-loading, magazine.
88. **MAGAZINE-CHARGERS, PACKS.** Cartridge-holding clips or packs for temporarily holding the loads and inserting them in the gun-magazine.
Search Class—
42—FIREARMS, subclass 50, Breech-loading, Magazines, Box.
89. **MAGAZINE-CHARGERS, PACKS, REVOLVER.** Devices for temporarily holding cartridges in such position as to readily insert them in the cylinder of a revolver.
90. **IMPLEMENTS.** Various implements intimately associated with the use of firearms, such as cartridge-openers, ball-extractors, loaders for muzzle-loading guns, wire-fence-cutting attachments, ramrods, etc.
91. **IMPLEMENTS, CLEANING.** Various gun-barrel-bore-cleaning devices.
Search Class—
15—BRUSHING AND SCRUBBING, subclasses 41, Chimney-cleaners, Flue and stovepipe, and 42, Chimney-cleaners, Lamp.
92. **IMPLEMENTS, CLEANING, ROD-JOINTS.** Rod-joints for gun-cleaning rods.
Search Classes—
137—WATER DISTRIBUTION, subclass 28, Pipe-couplings, Detachable.
166—ARTESIAN AND OIL WELLS, subclass 10, Sucker-rods.
93. **IMPLEMENTS, INTRENCHING.** Digging implements adapted for attachment to the gun or its bayonet.
Search Class—
55—HARROWS AND DIGGERS, subclass 14, Shovels, for intrenching implements which are not attachments to the gun.
94. **IMPLEMENTS, RESTS.** Various forms of arm-rests and also some gun-rests adapted to support the usual shoulder-firearm.
Search Class—
89—ORDNANCE, subclass 40 Mounts, Field, for the gun-rests for the heavier field-guns.
95. **IMPLEMENTS, SHELL-EXTRACTING.** Various implements or tools for extracting shells from the gun.

CLASS 48.—GAS, HEATING AND ILLUMINATING.

DEFINITIONS.

Class.

This class relates only to gas for heating and illuminating purposes and includes apparatus, processes, and compositions for the manufacture of such gas and means for the purification, distribution, and storage thereof.

This class does not include the manufacture of gas—such, for example, as oxygen, ozone, nitrous oxid, carbonic-acid gas, and chemical gases in general. These are not heating or illuminating gases.

This class does not include rigid holders for storing gas under compression.

This class does not include charging and discharging devices for retorts, nor does it include charging devices for cupola-generators, such as the well-known bell-and-hopper type. For these two classes of inventions see classes 202, CHARCOAL AND COKE, and 75, METALLURGY, respectively.

Every plant for producing gas from the combustion of fuel necessitates the use of a furnace of some sort, and where the invention alleged includes more than the furnace and extends into apparatus for treating the gases or modifications of the furnace, adapting it to treat them, the application belongs in class 48, whether the furnace *per se* be a limekiln or a smelting-furnace. In either case the furnace is merely an element of the plant and if divided out may be sent to its proper class.

The subclass of "Ammonia," under class 23, CHEMICALS, is very closely related to class 48, GAS, HEATING AND ILLUMINATING, and where the plant is specially designed to increase the product of ammonia the application for it should be assigned to that class and if reduced to the mere production of gas may afterward be transferred to class 48, GAS, HEATING AND ILLUMINATING.

Class 48, GAS, HEATING AND ILLUMINATING, deals with the manufacture of gas, while class 158, LIQUID AND GASEOUS FUEL BURNERS, relates to the simultaneous manufacture and combustion of gas without preliminary purification, fixation, or storage. Class 158, LIQUID AND GASEOUS FUEL BURNERS, is therefore primarily the superior class.

There is very little conflict between these classes where the manufacture of coal-gas is concerned, for the making and burning of such gas is generally conducted separately, and furthermore, the retort is not intimately related to the burner, so that if the case is one merely involving the manufacture of coal-gas by burning a portion of the gas generated in the retort to supply heat for the same the conflict will be settled by cross-referencing or, in case of an application, dividing out any novel burner into class 158, LIQUID AND GASEOUS FUEL BURNERS, and leaving the patent in class 48. If, however, the coal-gas were generated by heat derived from the gas and the heat thus produced were utilized in a furnace for metallurgical or steam-producing purposes, the invention lying in the gas-burning furnace, the patent for such combination would be classified in class 158, LIQUID AND GASEOUS FUEL BURNERS.

The relation between the classes on the line of oil-gas produced in a retort-furnace is much closer than in the case of coal-gas, for the retort is often so closely combined with the burner that they are inseparable. When patents of this character are in question, a complete plant for the making, in retorts, of an oil-gas and the purification, fixation, or storage of the same will be assigned to class 48, GAS, HEATING AND ILLUMINATING, and whenever in such cases the retort is heated by the combustion of a portion of the gas generated therein the patent will be cross-referenced into class 158, LIQUID AND GASEOUS FUEL BURNERS.

Patents which generate oil-gas in a retort by heat derived from a portion or all of the gas produced, but which do not cover the purification, fixation, or storage of the gas separately or combined, will be classified in class 158, LIQUID AND GASEOUS FUEL BURNERS.

All burners for burning liquid or gaseous fuel for heating purposes will be classified in class 158, LIQUID AND GASEOUS FUEL BURNERS.

All patents which cover nothing more than an independent retort for the generation of oil-gas, except such as are clearly intended to be used as a part of a vapor-burner, will be classified in class 48, GAS, HEATING AND ILLUMINATING.

Systems for feeding oil are more generally found in apparatus involving the burning of the oil or oil-gas, and except such as are especially adapted to feed to a carburetor or those where the feed is controlled by pressure generated in a retort or steam-boiler, which are classified in class 236, DAMPERS, AUTOMATIC, will be treated in class 158, LIQUID AND GASEOUS FUEL BURNERS.

Patents for stove structures in which carbureted air or gas is burned will belong to class 126, STOVES AND FURNACES, but where nothing is involved beyond the carbureting of the air or gas and burning it there is generally nothing novel in the burner, and the patents will be assigned to class 48, GAS, HEATING AND ILLUMINATING, and if a novel burner be claimed it will be a mere gas-burner and will be divided out or cross-referenced into class 158, LIQUID AND GASEOUS FUEL BURNERS.

This line leaves retorts in combinations for generating oil-gas in both classes; but this is unavoidable, and, furthermore, similar structures are found in many other classes, as stills, steam-boilers, etc., and a search for such features must be a general one.

Devices for the purpose above set forth not coming within the limits above defined, but which are claimed in combination with an internal-combustion engine or with any element thereof, will be placed in appropriate subclasses under class 123, INTERNAL-COMBUSTION ENGINES. This is not intended to apply to claims which, while in the form of a combination, state merely the intended use of the device—as, for example, "The combination, with an internal-

CLASS 48—Continued.

combustion engine, of" followed by words defining the structure of a mixture-producing device not in itself classified in internal-combustion engines.

Devices for producing an explosive mixture from a liquid hydrocarbon and air or for producing the combustible constituent for such an explosive mixture, in which the operation of the mixture-producing device does not necessarily depend upon the suction produced by an internal-combustion engine, which mixture-producing device is capable of operation independent of the engine and if continued in operation would continue to produce an explosive mixture whether or not the engine continued to operate, go in appropriate subclasses under class 48, GAS, HEATING AND ILLUMINATING, notwithstanding the fact that the device may be actually designed for the purpose of supplying an internal-combustion engine with an explosive mixture and may be operated by such engine. These devices are ordinarily supplied with air or liquid hydrocarbon, or both, under pressure and if operated independently of the engine would produce an explosive mixture which frequently is or might be stored for future use. If provided with regulating means to limit the amount of explosive mixture produced, such means are a part of the mixture-producing mechanism and are independent of the engine. Devices in which it does not positively appear whether they are operated by suction produced by an internal-combustion engine or not, which could be so operated, but which do not necessarily depend upon suction for their operation, go in appropriate subclasses under class 48, GAS, HEATING AND ILLUMINATING. These devices ordinarily consist, essentially, of a chamber containing a liquid hydrocarbon over or through which air flows, it not positively appearing whether such air is forced through such chamber as by a pump or is caused to flow therethrough by suction produced by an engine.

Subclasses.

1. ACETYLENE, GENERATION AND LIQUEFACTION. Apparatus and processes for the combined generation and liquefaction of acetylene gas.

Search Class—

62—REFRIGERATION, subclass 18, Liquefaction of gases.

2. ACETYLENE, GENERATOR AND HOLDER. Connected generators and gas-holders, the pressure in the generator regulating the supply of water in a to-and-fro or ebb-and-flow movement to the carbid.

3. ACETYLENE, GENERATOR AND MIXER. Apparatus and processes in which the acetylene gas is generated and combined with some aeriform or gaseous fluid. It includes those in which acetylene gas and another gas are simultaneously generated in the same or adjacent apparatus or gas is generated and passed over calcium carbide or mingled with acetylene gas.

4. ACETYLENE, GENERATORS, WATER-FEED. Structures whereby water is fed to the carbide. The water is fed by gravity and controlled by the pressure of the gas in the generator or by the operation of the gas-holder. It also includes structures for feeding the water to the carbide by capillary attraction. This subclass includes generators in which water is fed by gravity to the top of the carbide and automatically regulated by the gas-pressure in the generator. A hand-valve is employed to turn on and off the water-feed.

Search Class—

209—CARBONATING BEVERAGES, subclass 4, Gas-generators.

5. ACETYLENE, GENERATORS, WATER-FEED, HOLDER-OPERATED. Generators in which the water-feed is regulated by the movement of the gas-holder. This subclass includes structures whereby the gas-holder operates a valve which feeds water to the top of the carbide in the generator.

6. ACETYLENE, GENERATORS, WATER-FEED, HOLDER-OPERATED, SERIES. Generators in series of two or more and in which the water-feed is controlled by the gas-holder.

7. ACETYLENE, GENERATORS, WATER-FEED, HOLDER-OPERATED, SERIES, AUTOMATIC-SWITCH. Generators in series of two or more in which the water-feed is controlled by the gas-holder and automatically directed from one generator to another.

8. ACETYLENE, GENERATORS, WATER-FEED, HOLDER-OPERATED, CELLS-SERIES. Receptacles for carbide divided into communicating compartments to which water, fed successively, is controlled by the holder.

Search Class—

48—GAS, HEATING AND ILLUMINATING, subclass 42, Acetylene, Generators, Carbide-feed, Dip, Cells-series.

9. ACETYLENE, GENERATORS, WATER-FEED, HOLDER-OPERATED, GASOMETER AND HIGH-PRESSURE HOLDER. Receivers to which the after-generation is conducted—that is, when the gasometer has been filled with gas.

10. ACETYLENE, GENERATORS, WATER-FEED, HOLDER-OPERATED, INTERIOR-VALVE. Structures feeding water from the gas-holder tank to the generator, the gas-holder operating a valve located within the tank. It also includes structures wherein a valved water-tank is located within or on the gas-holder bell.

CLASS 48—Continued.

11. ACETYLENE, GENERATORS, WATER-FEED, HOLDER-OPERATED, ROTARY-CYLINDER. Cylinders, slatted or otherwise, for carbide which are caused to rotate by the gas-holder and in which the water-feed is controlled by the action of the gas-holder. This subclass also includes cylinders rotated by gravity or hand in which the water-feed is operated by the gas-holder.
12. ACETYLENE, GENERATORS, WATER-FEED, HOLDER-OPERATED, UNDERFEED. Generators to which the water is supplied beneath the upper surface of the carbide and regulated by the movement of the gas-holder.
13. ACETYLENE, GENERATORS, WATER-FEED, HOLDER-OPERATED, VALVELESS. Apparatus in which no valve is employed to regulate the feed of water to the generator. It includes means for displacing water, a flexible tube, a siphon or tilting vessel operated by the gas-holder. In this subclass the feed of water is controlled by the gas-pressure in the generator or holder acting upon the column of water to be fed. It also includes means carried by the gas-holder not otherwise classified under the subclasses of "Valveless feed."
14. ACETYLENE, GENERATORS, WATER-FEED, HOLDER-OPERATED, VALVELESS, DISPLACER. Devices, such as a wedge, piston, plunger, bucket, float, etc., carried by the gas-holder for displacing water contained in a tank, causing it to overflow and pass to the generator.
15. ACETYLENE, GENERATORS, WATER-FEED, HOLDER-OPERATED, VALVELESS, FLEXIBLE-TUBE. Flexible tubes for feeding water to the generator carried by the gas-holder connected to and elevated and depressed within or above and below the water-supply.
16. ACETYLENE, GENERATORS, WATER-FEED, HOLDER-OPERATED, VALVELESS, GENERATOR-SUPPORTED. Generators directly connected to the interior of the gas-holder and caused to dip in and out of the water in the gas-holder tank to feed water to the interior of the generator.
17. ACETYLENE, GENERATORS, WATER-FEED, HOLDER-OPERATED, VALVELESS, SIPHON. Siphon-tubes carried by the gas-holder for making connections between the water-tank and the generator for feeding water.

Search Class—

209—CARBONATING BEVERAGES, subclass 6, Gas-generators, Acid-feed siphon.

18. ACETYLENE, GENERATORS, WATER-FEED, HOLDER-OPERATED, VALVELESS, TILTING. Trunnioned or pivoted vessels operated by the gas-holder so as to discharge water into a pipe leading to the generator.

Search Class—

230—AIR AND GAS PUMPS, subclass 23, Fluid-piston, Tilted tank.

19. ACETYLENE, GENERATORS, WATER-FEED, EBB-AND-FLOW. Generators containing carbide to which the water is admitted by an ebb-and-flow movement produced by the gas-pressure in the generator.

Search Classes—

48—GAS, HEATING, AND ILLUMINATING, subclass 114, Generators, Hydrogen.
209—CARBONATING BEVERAGES.

20. ACETYLENE, GENERATORS, WATER-FEED, EBB-AND-FLOW, SERIES. Two or more generators having means for supporting carbide to which a body of water is supplied from beneath in an ebb-and-flow movement produced by the pressure of the gas in the generator.

21. ACETYLENE, GENERATORS, WATER-FEED, EBB-AND-FLOW, CELLS-SERIES. Receptacles for carbide divided into separate compartments or superposed and to which water fed successively from below in a body is controlled by the pressure of the gas in the generator.

22. ACETYLENE, GENERATORS, WATER-FEED, EBB-AND-FLOW, CENTRIC. Receptacles in the form of a bell and tank stationary one within the other, and means provided within the bell for supporting the carbide to which water is fed from beneath by a to-and-fro or ebb-and-flow motion controlled by the pressure of the gas in the bell.

23. ACETYLENE, GENERATORS, WATER-FEED, SERIES. Structures in which two or more generators are employed and which are used successively.

24. ACETYLENE, GENERATORS, WATER-FEED, CELLS-SERIES. Receptacles for carbide divided into communicating compartments to which water is fed successively. The receptacles may be in series. In this subclass the water is fed drop by drop to the top of each successive cell and controlled by the pressure of the gas in the generator.

25. ACETYLENE, GENERATORS, WATER-FEED, CAPILLARY. Generators in which water is supplied to the carbide by capillary attraction. In this subclass an absorbent is used to conduct the water.

26. ACETYLENE, GENERATORS, WATER-FEED, CAPILLARY, ADJUSTABLE. Structures whereby the absorbent through which the water is fed by capillary attraction, may be adjusted to and from the carbide.

CLASS 48—Continued.

27. ACETYLENE, GENERATORS, WATER-FEED, PERCOLATING. Generators wherein means and materials are employed, except capillary feed, through which water seeps in its passage to the carbide.

Search Class—

48—GAS, HEATING AND ILLUMINATING, subclass 59, Acetylene, Carbide-cartridges.

28. ACETYLENE, GENERATORS, WATER-FEED, PERCOLATING, PRESSURE-VALVES. Percolating water-feed generators having valves operated by the pressure of the gas in the generator to regulate the flow of water.

29. ACETYLENE, GENERATORS, WATER-FEED, EXPANSIBLE CARBID-CONTAINER. Cans or cases for carbide constructed of telescopic sections each having a closed end, one of which sections may be spring-pressed or it may be an open-top can containing carbide in which is placed a follower which may be spring or weight pressed.

30. ACETYLENE, GENERATORS, WATER-FEED, EXPANSIBLE WATER-HOLDER. Vessels constructed of flexible elastic material for feeding water to the carbide, the pressure in the generator causing a to-and-fro movement.

31. ACETYLENE, GENERATORS, WATER-FEED, INEXPANSIBLE GAS-HOLDER AND WATER-FEED. Vessels divided by a partition-wall into two communicating compartments, one of the compartments connecting with the generator to supply water thereto and receive gas therefrom, the pressure of the gas in the generator and compartment regulating the water-feed to the generator and causing the water to flow to and from the second compartment.

32. ACETYLENE, GENERATORS, WATER-FEED, OSCILLATING. Trunnioned receptacles provided with a support for the carbide and means to oscillate the same, whereby water in the lower part of the receptacle may be intermittently brought in contact with the carbide.

33. ACETYLENE, GENERATORS, WATER-FEED, ROTARY-CYLINDER. Cylinders of or for containing carbide, caused to rotate or oscillate, whereby the hydrate, due to decomposition of the carbide and water, is removed by agitation. This subclass includes cylinders, slatted or otherwise, rotated or oscillated by hand or gravity; also cylinders composed of carbide, and cylindrical carriers for carbide-packages.

Search Class—

48—GAS, HEATING AND ILLUMINATING, subclass 11, Acetylene, Generators, Water-feed, Holder-operated, Rotary-cylinder.

34. ACETYLENE, GENERATORS, WATER-FEED, ROTARY-GRATE. Generators having a rotary grate for supporting the carbide and removing the hydrate.

35. ACETYLENE, GENERATORS, WATER-FEED, UNDERFEED. Generators to which the water is supplied within and beneath the upper surface of the carbide drop by drop.

36. ACETYLENE, GENERATORS, WATER-FEED, INTERLOCKING DEVICES. Devices for preventing accidents in the handling of the generator including means for interlocking two or more valves or means which extend over or secure the cover to the generator and simultaneously operate either one or more of the following valves: the gas-outlet valve, the water-inlet valve, or the sludge-valve, or vent the generator.

Search Class—

48—GAS, HEATING AND ILLUMINATING, subclass 58, Acetylene, Generators, Valves, Gas and water-feed.

37. ACETYLENE, GENERATORS, WATER-FEED, PRESSURE-VALVES. Means for operating the water-feed valve by gas-pressure in the generator.

Search Class—

48—GAS, HEATING AND ILLUMINATING, subclass 28, Acetylene, Generators, Water-feed, Percolating, Pressure-valves.

38. ACETYLENE, GENERATORS, CARBIDE-FEED. Generators containing water into which the carbide is fed. This subclass contains generators to which the carbide is fed not otherwise classified under the various subclasses of "Carbide-feed."

39. ACETYLENE, GENERATORS, CARBIDE-FEED, APRON OR BELT. Generators in which an endless belt or an apron is employed to feed the carbide to the water. It does not include aprons or belts carrying buckets containing measured charges of carbide.

Search Class—

48—GAS, HEATING AND ILLUMINATING, subclasses 48, Acetylene, Generators, Carbide-feed, Measured charges, Rotary-carrier, and 49, Acetylene, Generators, Carbide-feed, Measured charges, Rotary-carrier, Vertical, for aprons or belts carrying buckets containing measured charges of carbide.

40. ACETYLENE, GENERATORS, CARBIDE-FEED, COCK. Generators containing water to which the feed of carbide is regulated by means of a cock.

41. ACETYLENE, GENERATORS, CARBIDE-FEED, DIP. Generators in which the carbide is caused to dip in and out of the water. In this subclass the carbide may be suspended from or held in suitable means supported by the gas-holder or supported by a piston or supported by yielding means within the tank.

CLASS 48—Continued.

42. ACETYLENE, GENERATORS, CARBID-FEED, DIP, CELLS-SERIES. Dip carbide-feed generators wherein the carbide-receptacle is composed of a number of chambers or compartments which are successively brought in contact with the water.
43. ACETYLENE, GENERATORS, CARBID-FEED, FLAP-VALVE. Carbide-feed generators having flap valves hinged at or near the mouth of the chute or hopper through which the carbide passes, automatically operated to feed the carbide.
44. ACETYLENE, GENERATORS, CARBID-FEED, HAND. Generator-tanks to which the carbide is fed by hand. In this subclass the carbide may be fed loosely or put in holders. Does not include cartridges.
45. ACETYLENE, GENERATORS, CARBID-FEED, HAND-DIP. Generators provided with suitable means for supporting carbide which is caused to dip in and out of the water, the carbide being fed through a hand-operated valve.
46. ACETYLENE, GENERATORS, CARBID-FEED, MEASURED CHARGES. Means for feeding definite charges of carbide. In this subclass will be found devices not otherwise classified under "Measured charges." This subclass includes those structures caused to reciprocate and discharge in the tank.
47. ACETYLENE, GENERATORS, CARBID-FEED, MEASURED CHARGES, CARTRIDGES. Devices for feeding cartridges containing carbide.
- Search Class—**
48—GAS, HEATING AND ILLUMINATING, subclass 59, Acetylene, Carbide-cartridges for construction of the cartridge.
48. ACETYLENE, GENERATORS, CARBID-FEED, MEASURED CHARGES, ROTARY-CARRIER. Includes a series of receptacles arranged on the same horizontal plane supported by means caused to rotate and discharge the receptacles successively. The receptacles may be provided with hinged bottoms and means for securing and releasing the same, or the receptacles may be trunnioned and provided with means for dumping the same or an endless belt provided with pockets.
49. ACETYLENE, GENERATORS, CARBID-FEED, MEASURED CHARGES, ROTARY-CARRIER, VERTICAL. Pocket-wheels arranged to rotate on a vertical plane and discharge successively. The pocket may be provided with lids and means for opening and closing the same. It also includes an endless belt having cups or carriers.
50. ACETYLENE, GENERATORS, CARBID-FEED, MEASURED CHARGES, STATIONARY. Receptacles for carbide which have a fixed relation with the generator. They may be hinged and caused to dump, or they may be receptacles provided with hinged or sliding bottoms with catches and releasing means or a receptacle divided by a series of hinged or sliding shelves with catches and releasing means.
51. ACETYLENE, GENERATORS, CARBID-FEED, PISTON. Generators where a piston is used to feed the carbide.
52. ACETYLENE, GENERATORS, CARBID-FEED, PLATE-VALVE. Carbide feed generators having a plate arranged beneath the discharge-opening of the carbide-hopper with an intervening space, the carbide resting upon the plate. The plate may be in the form of a disk, or curved.
53. ACETYLENE, GENERATORS, CARBID-FEED, POP-VALVE. Carbide feed generators having valves caused to pass to and fro or through the discharge-opening of the carbide-hopper in a vertical plane.
- 53.1. ACETYLENE, GENERATORS, CARBID FEED, POP-VALVE, BELL-OPERATED. Carbide feed pop-valves operated by the rising and falling movement of the bell.
- Search Class—**
48—GAS, HEATING AND ILLUMINATING, subclass 53.2, Acetylene, Generators, Carbide feed, Pop-valve, Bell-operated, Bell and holder combined, for pop-valves in which the carbide holder is carried by the bell.
- 53.2. ACETYLENE, GENERATORS, CARBID FEED, POP-VALVE, BELL-OPERATED, BELL AND HOLDER COMBINED. Bell-operated carbide feed pop-valves in which the carbide holder is carried by the bell.
- 53.3. ACETYLENE, GENERATORS, CARBID FEED, POP-VALVE, DIAPHRAGM-OPERATED. Carbide feed pop-valves operated by the movement of the diaphragm.
- 53.4. ACETYLENE, GENERATORS, CARBID FEED, POP-VALVE, FLOAT-OPERATED. Carbide feed pop-valves operated by the movement of the float.
54. ACETYLENE, GENERATORS, CARBID-FEED, SCREW. Generators having a screw conveyor to feed the carbide thereto.
55. ACETYLENE, GENERATORS, CARBID-FEED, SLIDE-VALVE. Carbide feed generators in which the valve slides upon its seat distinguished from the structures in subclass 52, Acetylene, Generators, Carbide-feed, Plate-valve, in that there is no intervening space between the valve and the mouth of the hopper or seat.

CLASS 48—Continued.

56. ACETYLENE, GENERATORS, AUTOMATIC SAFETY ESCAPE. Structures used in connection with the generator whereby excess pressure in the generator permits gas to escape.
57. ACETYLENE, GENERATORS, SLUDGE-REMOVER. Means located in and attached to the generator for stirring and removing the hydrate.
- Search Class—**
48—GAS, HEATING AND ILLUMINATING, subclass 47, Acetylene, Generators, Carbide-feed, Measured charges, Cartridges.
58. ACETYLENE, GENERATORS, VALVES, GAS AND WATER-FEED. Generators in which the valves controlling the water-feed and the gas-outlet are connected so as to open or close simultaneously. It also includes the simultaneous venting of the generator.
- Search Class—**
48—GAS, HEATING AND ILLUMINATING, subclass 36, Acetylene, Generators, Water-feed, Interlocking devices.
59. ACETYLENE, CARBID-CARTRIDGES. Structures such as cans or cases to be used in generators and in which a small quantity of carbide is placed.
- Search Classes—**
48—GAS, HEATING AND ILLUMINATING, subclass 29, Acetylene, Generators, Water-feed, Expandable carbide-container.
23—CHEMICALS, subclass 11, Packing chemicals.
60. ACETYLENE, CARBID-CARTRIDGES, CONGLOMERATE. Cartridges in which the carbide is combined with an agglutinating and protecting substance and formed into briquets, tablets, sticks, etc.
61. GENERATORS. Miscellaneous generators not otherwise classifiable.
62. GENERATORS, CUPOLA. Miscellaneous generators, having an upright, substantially cylindrical body.
- Search Class—**
75—METALLURGY, subclass 5, Furnaces, Blast.
63. GENERATORS, CUPOLA, AIR AND STEAM INJECTED. Cupola structures wherein air and steam are simultaneously injected for the continuous production of gas.
- Search Class—**
48—GAS, HEATING AND ILLUMINATING, subclass 64, Generators, Cupola, Air and steam injected, Superheated.
64. GENERATORS, CUPOLA, AIR AND STEAM INJECTED, SUPERHEATED. Means for superheating the air or steam, or both, before entering the cupola.
65. GENERATORS, CUPOLA, ELECTRIC. Structures of the cupola type in which an electric current is used or produced for heating purposes.
66. GENERATORS, CUPOLA, ROTARY-BOTTOM. Cupola structures provided with a bottom for supporting the fuel, constructed to rotate or rock. Does not include rotary grates.
- Search Class—**
48—GAS, HEATING AND ILLUMINATING, subclass 68, Generators, Cupola, Water-jacket, Rotary-bottom.
67. GENERATORS, CUPOLA, WATER-JACKET. Cupola structures having a water-jacket.
68. GENERATORS, CUPOLA, WATER-JACKET, ROTARY-BOTTOM. Water-jacketed cupola structures having a rotary bottom for supporting the fuel.
69. GENERATORS, CUPOLA, WATER-SEAL PIT. Cupola structures having an open bottom and a basin or trough for water, forming a seal for closing said open bottom and through which the ash is removed.
70. GENERATORS, CUPOLA, HYDROGEN. Cupola structures for heating metals or their oxides by means of which hydrogen is obtained by the decomposition of steam or hydrocarbons, or both.
71. GENERATORS, CUPOLA, COAL, OIL, AND WATER. Cupola structures in which coal is distilled or gasified and into which steam or water is injected and decomposed and into which oil or oil-vapor is also injected. The oil-vapor may be added to the coal and water gas outside of the distilling-chamber.
72. GENERATORS, CUPOLA, COAL AND OIL. Generators in the form of a cupola or shaft in which coal is distilled or gasified and into which oil or oil-vapor is introduced or oil-gas is added.
73. GENERATORS, CUPOLA, COAL AND WATER. Cupola structures in which coal is distilled or gasified and into which steam is injected and decomposed. Water-gas may be made separately and added to the coal-gas.
74. GENERATORS, CUPOLA, REFRACTORY FILLING. Cupola structures having a filling of refractory material, such as brick, so as to be heated to a high temperature.
- Search Class—**
48—GAS, HEATING AND ILLUMINATING, subclass 80, Generators, Cupola, Water, Carburetor, Fixer.

CLASS 48—Continued.

75. GENERATORS, CUPOLA, OIL AND STEAM INJECTED. Cupola structures adapted for injection of oil or oil-vapor and steam into incandescent coal.
76. GENERATORS, CUPOLA, PRODUCERS. Cupola structures wherein ignited fuel is subjected to an air-blast.
- Search Class—**
48—GAS, HEATING AND ILLUMINATING, subclasses 67, Generators, Cupola, Rotary-bottom; 68, Generators, Cupola, Water-jacket, Rotary-bottom, and 69, Generators, Cupola, Water-seal pit.
77. GENERATORS, CUPOLA, COAL. Generators in the form of a cupola or shaft in which coal is distilled or gasified.
78. GENERATORS, CUPOLA, WATER. Cupola structures for containing a bed of incandescent fuel to which steam is admitted. This subclass includes the alternate process of first blasting with air and then decomposing steam.
79. GENERATORS, CUPOLA, WATER, CARBURETER. Cupola structures for producing water-gas by the alternate process by first blasting and then decomposing steam. The water-gas thus produced is then carburized by the addition of a hydrocarbon fluid, oil-vapor, or oil-gas. In this subclass the water-gas is passed through an ordinary carbureting vessel containing oil.
80. GENERATORS, CUPOLA, WATER, CARBURETER, FIXER. Containing in addition to the cupola structure for the production of water-gas by the alternate process a chamber filled with refractory material to be highly heated and into which a hydrocarbon oil is admitted. Oil-gas may be admitted into this chamber, the oil or oil-gas combining with the water-gas.
81. GENERATORS, CUPOLA, WATER, CARBURETER, RETORT. Combining with the well-known cupola structure for the production of water-gas a retort to and through which the water-gas passes and to which a hydrocarbon oil or vapor is simultaneously admitted.
82. GENERATORS, CUPOLA, WATER, UP-AND-DOWN RUN. Cupola structures containing a body or bodies of incandescent fuel through which the steam is caused to pass first upwardly and then downwardly, or vice versa.
83. GENERATORS, CUPOLA, WATER, UP-AND-DOWN RUN, INTERLOCKING VALVES. Cupola structures for making water-gas by the up-and-down run provided with connected valves for changing the direction of the run.
84. GENERATORS, CUPOLA, WATER, OIL-GAS. Combined cupola structure for the production of water-gas and a means for producing oil-gas and combining the two gases.
85. GENERATORS, CUPOLA, CARBON MONOXID. Generators and processes for the manufacture of carbon-monoxid gas. Includes carbureting the gas.
86. GENERATORS, CUPOLA, CHARGERS. Miscellaneous means for feeding fuel to the cupola gas-generator.
Note.—Does not include the bell-and-hopper structure, such being classified in class 75, METALLURGY, subclass 115, Furnaces, Blast, Charging Devices, Bell and hopper.
87. GENERATORS, CUPOLA, ACCESSORIES. Means applied to cupola structures, such as pressure-indicators, means for distributing steam, means for switching the blast or run, removable bottoms, fuel-rammers, poke-holes, peep-holes, oil-spraying devices, etc.
- Search Classes—**
158—LIQUID AND GASEOUS FUEL BURNERS, subclass 73, Burners, Liquid-fuel, Spray, and the subclasses thereunder.
75—METALLURGY.
88. GENERATORS, CUPOLA, STIRRER. Cupola generators having means within the cupola for stirring the fuel.
- Search Class—**
75—METALLURGY, subclass 143, Roasters, Stirrers, Rotary.
89. GENERATORS, RETORT. Closed heated retorts for the gasification of carbonaceous material not otherwise classifiable.
90. GENERATORS, RETORT, DOMESTIC PLANTS. Individual plants consisting of a retort, purifier, condenser, and holder. The retort may be placed in an ordinary cookstove. They may omit the purifier, condenser, or holder.
91. GENERATORS, RETORT, PORTABLE. Generators constructed to be transported from place to place for the purpose of filling local gasometers.
92. GENERATORS, RETORT, METAL-BATH. Retorts containing heated molten metal into which materials to be gasified are injected.
93. GENERATORS, RETORT, OIL AND GAS INJECTED. Retorts into which oil and gas are injected.
94. GENERATORS, RETORT, OIL AND STEAM INJECTED. Retorts into which oil and steam or water are injected.
95. GENERATORS, RETORT, OIL AND STEAM INJECTED, AIR. Retorts into which oil, steam, or water and air are injected to be gasified. The air may be added to the gas produced from the oil and steam or water.

CLASS 48—Continued.

96. GENERATORS, RETORT, OIL AND STEAM INJECTED, CARBURETER. Retorts into which oil and steam or water are injected and the resultant gas passed through a vessel containing hydrocarbon fluid.
97. GENERATORS, RETORT, HYDROGEN. Retorts for heating metals or their oxids for the decomposition of steam or hydrocarbons, or both; also includes the separation of gases by dialysis.
98. GENERATORS, RETORT, COAL, OIL, AND WATER. Combined retorts for gasifying coal and means for introducing steam or water and oil. The water or steam may be converted into CO, H, and the oil gasified in separate retorts and combined with the coal-gas.
99. GENERATORS, RETORT, COAL AND WATER. Combined retorts for the gasification of coal and means for introducing water, steam, or water-gas.
100. GENERATORS, RETORT, COAL AND OIL. Combined retorts for gasifying coal and means for introducing oil therein or for combining the coal and oil gas.
101. GENERATORS, RETORT, COAL. Retorts for producing gas from coal.
102. GENERATORS, RETORT, OIL. Retorts containing a body of oil or into which oil is injected.
Note.—This subclass does not include vapor-generators forming a part of an explosive-engine shown in class 123, INTERNAL COMBUSTION ENGINES, subclass 119, Charge forming devices, and the subclasses thereunder. It does not include means for vaporizing and burning oil as shown in class 67, ILLUMINATING BURNERS, subclass 37, Liquid fuel, Burners, Vapor, and the subclasses thereunder.
- Search Class—**
158—LIQUID AND GASEOUS FUEL BURNERS, subclass 53, Burners, Liquid-fuel, Retort, and the subclasses thereunder.
103. GENERATORS, RETORT, OIL, ELECTRIC HEATER. Retorts in which is located an electric heater for gasifying the oil.
Note.—This subclass does not include apparatus or processes where an electrolytic action is effected upon the material gasified, for example.
- Search Classes—**
204—ELECTROCHEMISTRY, subclass 31, Synthesis.
219—ELECTRIC HEATING AND RHEOSTATS, subclass 38, Heaters, fluid.
104. GENERATORS, RETORT, OIL, JET-MIXERS. Retorts in which oil is gasified, the gas-pressure being used to entrain air on its way to the gasometer. In this subclass the gas is purified or fixed on its way to the storage-gasometer. The retort is heated by a portion of the gas generated. Does not include similar devices where a portion or all of the gas is burned to heat the retort, in which there is no fixation, purification, or storage of the gas.
- Search Classes—**
67—ILLUMINATING BURNERS, subclass 37, Liquid fuel, Burners, Vapor, and the subclasses thereunder.
158—LIQUID AND GASEOUS FUEL BURNERS, subclass 53, Burners, Liquid-fuel, Retort, and the subclasses thereunder.
105. GENERATORS, RETORT, OIL, STEAM-INJECTED. Vessels containing a body of oil into which steam is injected. Also includes devices feeding oil for gasification into a highly-superheated jet of steam for decomposition.
106. GENERATORS, RETORT, OIL, AUTOMATIC-FEED. Devices whereby the oil fed to the retort is regulated by the pressure of the gas either in the retort or gasometer.
- Search Class—**
48—GAS, HEATING AND ILLUMINATING, subclass 104, Generators, Retort, Oil, Jet-mixers.
107. GENERATORS, RETORT, OIL, AIR-INJECTED. Combined retorts for gasifying oil and means for introducing air or oxygen. The air or oxygen may be added to the oil-gas after it leaves the retort or in the gasometer.
- Search Class—**
67—ILLUMINATING BURNERS, subclass 37, Liquid fuel, Burners, Vapor, and the subclasses thereunder.
108. GENERATORS, RETORT, WATER. Retorts constructed to contain incandescent coal and into which steam is injected.
109. GENERATORS, RETORT, WATER, CARBURETER. Retorts constructed to contain incandescent coal for making water-gas, which is afterward carburized.
110. GENERATORS, RETORT, WATER, OIL-GAS. Retorts for separately making water and oil gases, which may afterward be mixed.
111. GENERATORS, RETORT, WOOD. Retorts in which wood, peat, sawdust, or other vegetable matter is distilled for making gas and to which steam may be added and decomposed.
- Search Class—**
202—CHARCOAL AND COKE, subclasses 3, Charcoal, Retorts, and 9, Coke, Retort-ovens.
112. GENERATORS, RETORT, WOOD, OIL. Retorts in which wood, etc., is distilled for making gas and into which oil is injected or separately gasified and added to the wood-gas. Steam may also be injected.

CLASS 48—Continued.

113. GENERATORS, RETORT, FURNACES. Furnace structures to generate producer-gas for heating benches of retorts. The furnace may have flues for the passage of air, also flues for the passage of the products of combustion whereby the air is heated. Includes settings for the retorts and processes for heating the retorts.
114. GENERATORS, HYDROGEN. Generating plants for making hydrogen, also for carbureting the same, also for carbureting air and combining with hydrogen. This subclass includes devices whereby an acid solution is brought in contact with a metal.
- Search Classes—**
 48—GAS, HEATING AND ILLUMINATING, subclasses under "Acetylene."
 67—ILLUMINATING BURNERS, subclass 5, Igniting devices, Hydrogen-platinum.
 209, CARBONATING BEVERAGES, subclass 4, Gas-generators, and the subclasses thereunder.
115. GENERATORS, HYDROGEN, SERIES. Two or more generators which may be operated in unison or in sequence.
116. GENERATORS, HYDROGEN, CARBURETER. Combined hydrogen-generators and means for carbureting the hydrogen by passing the same in contact with or through a hydrocarbon liquid.
117. GENERATORS, HYDROGEN, CARBURETER, AIR. Combined hydrogen-generators and means for carbureting air and mixing the two gasses. They may further carburet the mixture.
118. GENERATORS, HYDROGEN, CARBURETER, FLOATING-OIL. Generators in which a hydrocarbon oil floats on the surface of the acid solution and through which the generated hydrogen passes.
119. RETORTS. Vessels constructed of metal, clay, etc., for gasifying materials by heat applied thereto. This subclass includes retorts of various designs arranged on a horizontal plane.
- Search Classes—**
 34—DRIERS, subclass 30, Retort.
 75—METALLURGY, subclass 154, Spelter, Retorts.
120. RETORTS, COMPOUND. Retorts divided or formed into two or more chambers.
121. RETORTS, ROTARY. Retorts constructed to rotate.
122. RETORTS, INCLINED. Retorts constructed to be placed in the furnace in an inclined position.
- Search Classes—**
 34—DRIERS, subclass 30, Retort.
 75—METALLURGY, subclass 154, Spelter, Retorts.
123. RETORTS, VERTICAL. Retorts vertically arranged within the furnace.
124. RETORTS, LIDS. Doors for closing the mouth of retorts. Includes special fastening means.
- Search Classes—**
 34—DRIERS, subclass 30, Retort.
 110—FURNACES, subclass 173, Doors, and the subclasses thereunder.
 202—CHARCOAL AND COKE, subclass 6, Coke, Ovens, Doors.
 220—METALLIC SHIPPING AND STORING VESSELS, subclass 124, Tank-closures.
125. RETORTS, LIDS, ROTARY. Doors for closing the mouth of retorts, constructed to rotate on the mouthpiece or face of the retort with a grinding action.
126. RETORTS, ATTACHMENTS. Auxiliary devices applied to retorts, such as mouthpieces, door-seats, stoppers, etc.
127. RETORTS, CLEANING. Means, processes, and compositions for removing, also preventing, the formation of incrustations, tar deposits, etc., on the interior of retorts, stand-pipes, hydraulic mains, and the distributing-pipes.
- Search Classes—**
 83—MILLS, subclass 64, Steam-boiler and flue-scrappers.
 122—LIQUID HEATERS AND VAPORIZERS, subclass 390, Cleaning, Fluid jet, and the subclasses thereunder.
 137—WATER DISTRIBUTION, subclasses 70, Mains and pipes, Cleaners, and 97, Nozzles, Tube cleaners.
 230—AIR AND GAS PUMPS, subclass 38, Fluid piston, Injectors and aspirators, Tube cleaners.
128. PURIFIERS. Means not otherwise classifiable wherein gas is subjected to the action of a medium capable of removing impurities.
129. PURIFIERS, WASHER AND DRY PURIFIER. Combined means for containing separately a washing fluid and a dry material, such as lime, through each of which the gas is caused to pass.
130. PURIFIERS, WASHER AND SCRUBBER. Means for subjecting gas to the action of a liquid for removing impurities, such as ammonia, tar, etc. This subclass includes structures to contain a body of liquid through which the gas passes.
- Search Classes—**
 75—METALLURGY, subclass 30, Fume-arresters.
 98—PNEUMATICS, subclass 39, Air Moistening, cooling, and cleansing.
 110—FURNACES, subclass 183, Smoke Purifiers.

CLASS 48—Continued.

131. PURIFIERS, WASHER AND SCRUBBER, FLOAT. Means caused to float on a body of water beneath which the gas is caused to pass.
- Search Class—**
 48—GAS, HEATING AND ILLUMINATING, subclass 169, Carbureters, Surface, Float.
132. PURIFIERS, WASHER AND SCRUBBER, RECIPROCATING. Means in the form of a perforated bell caused to dip in and out of a body of water and through which the gas is caused to pass.
133. PURIFIERS, WASHER AND SCRUBBER, ROTARY. Means, such as a disk, caused to rotate within a vessel containing a body of water and through or against which the gas is caused to pass.
134. PURIFIERS, WASHER AND SCRUBBER, ROTARY, VERTICAL. Means, such as a disk, arranged vertically and caused to rotate within a vessel containing a body of water and through or against which the gas is caused to pass.
135. PURIFIERS, WASHER AND SCRUBBER, SPRAY. Structures in which water is sprayed and through which the gas is caused to pass.
- Search Classes—**
 62—REFRIGERATION, subclasses 25, Condensers, Jet, and 31, Heat transferers and conservers, Injected.
 75—METALLURGY, subclass 30, Fume-arresters.
 210—WATER PURIFICATION, subclass 21, Steam heater and filter.
136. PURIFIERS, WASHER AND SCRUBBER, SPRAY, ROTARY. Structures in which the means for spraying the water is caused to rotate.
137. PURIFIERS, BOXES. Vessels constructed to contain a dry purifying material, such as lime.
- Search Class—**
 34—DRIERS, subclasses 1, Absorbent; 2, Baffles and screens; 9, Cylinder, Internal, Vertical; 10, Disk and hopper; 11, Elevator; 12, Endless carrier; 15, Floors, Tilting section; 34, Shafts, Vertical; 37, Shaft and shelf; 38, Shaking.
138. PURIFIERS, CONDENSERS. Means for removing liquefiable matter from gas by condensation.
- Search Classes—**
 34—DRIERS, subclass 3, Condensers.
 62—REFRIGERATION, subclasses 24, Condensers; 26, Condensers, Surface, and 30, Heat transferers and conservers, Surface.
 196—MINERAL OILS, subclass 5, Apparatus, Stills, Condensers.
139. PURIFIERS, TRAYS. Grates for supporting the dry purifying material.
- Search Classes—**
 34—DRIERS, subclasses 14, Floors, Fixed; 15, Floors, Tilting section; 17, Frames and trays, and 21, Pans.
 126—STOVES AND FURNACES, subclass 152, Grates, and the subclasses thereunder.
140. PURIFIERS, SEPARATORS. Means whereby foreign matter—such as oil, water, dirt, etc.—is separated from gas, principally natural gas, and by gravity.
- Search Classes—**
 83—MILLS, subclass 90, Steam separators.
 122—LIQUID HEATERS AND VAPORIZERS, subclass 488, Separators, Boiler circulation, and the other subclasses under separators.
141. PURIFIERS, SEPARATORS, CENTRIFUGAL. Means for separating impurities from gas centrifugally.
- Search Class—**
 127—SUGAR AND SALT, subclasses 3, Centrifugal machines, and the subclasses thereunder.
142. PURIFIERS, SEPARATORS, FLOAT-VALVE. Means combined with the separator wherein a float-valve is employed to discharge the precipitated impurities.
143. PURIFIERS, REVIVIFYING. Apparatus and processes for restoring the spent purifying material to its original efficiency.
144. CARBURETERS. Vessels for containing liquid hydrocarbon through or over which air or gas is passed.
- Note.—See also main class definition under this class.
- Search Class—**
 123—INTERNAL-COMBUSTION ENGINES, subclass 119, Charge-forming devices, and the subclasses thereunder.
145. CARBURETERS, REGULATING. Means for controlling the admission of air or gas to or passage of gas from the carbureter, whereby a steady pressure is had at the burner.
146. CARBURETERS, SERIES. Two or more connected carbureting vessels, not single vessels having two or more communicating compartments.
147. CARBURETERS, FIXER. Carbureting vessels, combined with heated means outside of the carbureter for fixing the carbureted air or gas.
148. CARBURETERS, HEATER. Means for heating the carbureter.
- Search Classes—**
 48—GAS, HEATING AND ILLUMINATING, subclass 161, Carbureters, Lamps.
 123, INTERNAL-COMBUSTION ENGINES, subclass 119, Charge-forming devices, and the subclasses thereunder.

CLASS 48—Continued.

149. **CARBURETERS, HEATER, AIR.** Means for heating the air before it enters the carbureting vessel.
Search Class—
 48—GAS, HEATING AND ILLUMINATING, subclass 161, Carbureters, Lamps.
150. **CARBURETERS, OIL-FEED.** Means for feeding oil to the carbureter.
Search Class—
 67—ILLUMINATING BURNERS, subclass 36, Liquid fuel, Burners and the subclasses thereunder.
151. **CARBURETERS, OIL-FEED, FLOAT-VALVES.** Carbureters having valves controlled by a float resting upon the oil in the carbureting-chamber or a chamber connected thereto.
152. **CARBURETERS, OIL-FEED, PUMP.** Carbureters having a pump for delivering the oil to the carbureting-chamber.
153. **CARBURETERS, OIL-FEED, ROTARY.** Carriers caused to dip into the oil and discharge the same at an elevated point into the carbureting-chamber.
154. **CARBURETERS, OIL-FEED, SPRAY.** Vessels through which air or gas is passed and into which oil is sprayed.
- 154.1. **CARBURETERS, OIL-FEED, SUCTION-CONTROLLED VALVE.** In these devices the oil supply to the carbureter is controlled by a valve, which is operated by a movable member (generally a valve) in the air duct, which is itself operated by the air current.
155. **CARBURETERS, ATOMIZERS.** Vessels provided with means for atomizing hydrocarbon oil by air or gas under pressure.
Search Classes—
 98—PNEUMATICS, subclass 40, Ventilation, Air moistening, cooling, and cleansing, Atomizers.
 123—INTERNAL-COMBUSTION ENGINES, subclass 131, Charge-forming devices, Atomizers.
- 155.1. **CARBURETERS, ATOMIZERS, CONSTANT LEVEL.** Devices which atomize or spray the oil by air pressure produced by suction or otherwise and which have in addition to the atomizing elements means for maintaining the oil at a constant height with reference to the end of the oil supply conduit, generally at or slightly below the level of the discharge end.
Search Class—
 123—INTERNAL-COMBUSTION ENGINES, subclass 132, Charge-forming devices, Atomizers, Constant-level.
- 155.2. **CARBURETERS, ATOMIZERS, CONSTANT LEVEL, AUTOMATIC DILUTION.** Atomizing carbureters which in addition to the means stated in connection with subclass 155.1 above automatically supply an additional amount of air in proportion to the increased amount of consumption.
156. **CARBURETERS, CAPILLARY.** Vessels containing an absorbent material for mechanically suspending hydrocarbon oil through which the air or gas passes.
Search Class—
 48—GAS, HEATING AND ILLUMINATING, subclasses 164, Carbureters, Pivoted, and 165, Carbureters, Pivoted, Revolving.
157. **CARBURETERS, CAPILLARY, SPIRAL-PASSAGE.** Vessels provided with a spiral passage containing an absorbent material for the hydrocarbon liquid through which the air or gas passes.
158. **CARBURETERS, CAPILLARY, VERTICAL-SCREEN.** Vessels in which the absorbent material in the form of wicking or curtains is vertically arranged.
159. **CARBURETERS, CAPILLARY, ZIGZAG-PASSAGE.** Vessels containing staggered passages provided with an absorbent material for the liquid hydrocarbon.
160. **CARBURETERS, GRAVITY.** Vessels constructed to contain hydrocarbon liquid, or to which the same is fed drop by drop, and to which air is admitted under atmospheric pressure, and from which the carbureted air passes by gravity.
Search Class—
 48—GAS, HEATING AND ILLUMINATING, subclass 162, Carbureters, Lamps, Gravity.
161. **CARBURETERS, LAMPS.** Vessels containing hydrocarbon liquid through which air or gas is passed and having burners for illuminating. The air or gas may be heated by the burner.
162. **CARBURETERS, LAMPS, GRAVITY.** Vessels containing hydrocarbon liquid to which air is admitted under atmospheric pressure and from which the carbureted air passes by gravity, said vessels provided with a burner for illuminating.
163. **CARBURETERS, OSMOTIC.** Vessels having a wall or passage composed of porous material and through which oil seeps and with which the air or gas contacts.
164. **CARBURETERS, PIVOTED.** Vessels constructed so as to be oscillated or inverted.
165. **CARBURETERS, PIVOTED, REVOLVING.** Vessels pivoted so as to revolve.
166. **CARBURETERS, SUBMERGED-BLAST.** Means for introducing the air or gas into the body beneath the surface of the oil.

CLASS 48—Continued.

167. **CARBURETERS, SUBMERGED-BLAST, COIL.** Pipes, generally in the form of a coil containing oil, through which air is passed.
168. **CARBURETERS, SURFACE.** Vessels to contain oil, over the surface of which the air or gas is passed.
169. **CARBURETERS, SURFACE, FLOAT.** Vessels containing oil and a float, resting on the surface or within the body of the oil, having an air or gas supply.
170. **CENTER AND BY-PASS VALVES.** Means for directing the passage of the gas through two or more purifiers and for by-passing one or more.
171. **DIP-PIPES.** Hydraulic mains and gas-pipes extending thereinto leading from the gas-generator. The mains may be provided with means for maintaining a liquid seal for the pipes.
172. **DIP-PIPES, VALVES.** Dip-pipes having valves for closing the pipe or by-passing the seal.
173. **EXHAUSTERS.** Means for drawing the gas from the generator, regulating the action of the same, and preventing the formation of a vacuum.
174. **HOLDERS.** Vessels for the storage of gas. This subclass includes stationary vessels and independent parts to be used in the construction of the holder.
Search Classes—
 105—RAILWAY ROLLING-STOCK, subclass 264, Cars, Freight, Tank.
 220—METALLIC SHIPPING AND STORING VESSELS, subclasses, 108, Casks, and 125, Tanks, and subclasses thereunder.
175. **HOLDERS, HIGH-PRESSURE SAFETY ESCAPE.** Means combined with the holder so related that on excessive pressure in the holder the gas escapes.
176. **HOLDERS, BELL AND TANK.** Structures consisting of an open-top tank and an inverted bell. The tank may be provided with a purifier through which the gas passes on its way to the bell; or with a chamber for storing oil or various utensils used around the works.
Search Classes—
 48—GAS, HEATING AND ILLUMINATING, subclasses 5, Acetylene, Generators, Water-feed, Holder-operated, and 104, Generators, Retort, Oil, Jet-mixers.
 230—AIR AND GAS-PUMPS, subclass 17, Fluid-piston, Tank and bell.
177. **HOLDERS, BELL AND TANK, SECTIONAL-BELL.** Structures where the bell is divided horizontally into sections having water-seal joints and telescoping.
178. **HOLDERS, COLLAPSIBLE.** Holders comprising a plurality of sections of which one or more is flexible and so related that the holder may collapse.
179. **HOLDERS, TANK.** Open-top chambers within which the bell moves.
Search Class—
 220—METALLIC SHIPPING AND STORING VESSELS, subclass 125, Tanks.
180. **MIXERS.** Processes and apparatus for mixing combustible gases or a gas and a supporter of combustion.
 Note.—It does not include mixers peculiar to explosive-engines such as found in class 123. INTERNAL COMBUSTION ENGINES, subclass 119, Charge-forming devices, and the subclasses thereunder, nor such as are used in class 158, LIQUID AND GASEOUS FUEL BURNERS.
181. **MIXERS, BELL AND TANK.** Mixers comprising a bell and tank within which the gases are mixed, the movement of the bell controlling the supply of gases or air and gas.
182. **MIXERS, BELL AND TANK, ANTERIOR.** Devices where the mixture of gases or gas and air takes place before entering the bell and is controlled thereby.
183. **MIXERS, BELL AND TANK, POSTERIOR.** Devices where the mixture of gases or air and gas is made beyond the bell and controlled thereby.
184. **MIXERS, DIAPHRAGM.** Devices where a diaphragm operates the valves controlling the supply of gases or gas and air, the pressure of the gas operating the diaphragm.
185. **MIXERS, GRAVITY.** Devices where a body connected to and operating the supply-valves for the gases or gas and air is made buoyant by the specific gravity of the gas.
186. **MIXERS, PUMP.** Devices where pumps are employed to deliver the gases or air and gas to a mixing-chamber.
187. **MIXERS, ROTARY-DRUM.** Bladed rotary drums located within a casing for drawing in the gases or air and gas and mixing them.
188. **MIXERS, ROTARY-DRUM, ANTERIOR.** Devices where the air and gas or gases are mixed before entering the drum.
189. **MIXERS, ROTARY-DRUM, POSTERIOR.** Devices where the air and gas or gases are mixed beyond the drum, the drum being used to force one or both of the elements.

CLASS 48—Continued.

190. DISTRIBUTION. Means and methods for the distribution of gas.
 Note.—This subclass contains miscellaneous patents not otherwise classified, such as those for preventing the freezing in the pipes, charging distributing-holders on trains, ships, etc.
Search Class—
 137—WATER DISTRIBUTION, subclass 75, Mains and pipes, Pipes.
191. DISTRIBUTION, REGULATING PRESSURE. Means for reducing and regulating the pressure of gas in a distributing system.
 Note.—It does not include the specific construction of the regulator found in class 50, FLUID-PRESSURE REGULATORS.
192. DISTRIBUTION, SAFETY DEVICES. Means for preventing, also localizing and confining, explosions in a gas-distributing system.
193. DISTRIBUTION, LEAKAGE. Means for detecting and providing for the escape of leakage gas from mains.
Search Class—
 137—WATER DISTRIBUTION, subclass 77, Mains and pipes, Leak-detectors.
194. DISTRIBUTION, LEAKAGE, PREVENTING. Means for preventing the leakage of gas from the mains at their couplings.
Search Class—
 137—WATER DISTRIBUTION, subclass 29, Pipe-couplings, Permanent.
195. DISTRIBUTION, ODORIZERS. Means for charging gas with an odorous substance.
196. NATURAL. Apparatus and processes for the treatment of natural gas to make the same suitable for heating or illuminating purposes.
197. PROCESSES. Processes not otherwise classifiable for the manufacture and accessory treatment of gas.
198. PROCESSES, HYDROGEN. Processes for bringing together of an acid solution and a metal or heating metals or their oxides and decomposing steam or hydrocarbon, or both, in contact therewith; also the decomposition of water by electrolysis.
199. PROCESSES, HYDROGEN, CARBURETING. Processes wherein hydrogen gas is brought in contact with a liquid hydrocarbon.
200. PROCESSES, COAL, OIL, AND WATER. Processes for gasifying coal and oil and decomposing water and combining the resultant gases. These elements may be separately gasified and united or conjointly gasified.
201. PROCESSES, COAL AND OIL. Processes for making and combining coal and olefant gases. They may be made separately and united or made combined.
202. PROCESSES, COAL AND WATER. Processes for gasifying coal and combining therewith water-gas or simultaneously gasifying coal and decomposing steam in the same retort.
203. PROCESSES, PRODUCER. Processes for making the well-known Siemens producer gas, which consists in blasting with air an ignited bed of fuel.
204. PROCESSES, WATER. Processes whereby a body of fuel is first heated to incandescence and then steam injected.
205. PROCESSES, WATER, CARBURETING. Processes whereby steam is decomposed by being passed through a body of incandescent fuel and then carbureted by means of a volatile hydrocarbon either in the form of a liquid, vapor, or gas.
206. PROCESSES, WATER, CONTINUOUS. Processes for the continuous manufacture of water-gas by bringing steam into contact with coal maintained at a decomposing temperature either by internal combustion or heat applied.
207. PROCESSES, WATER, DOWN-RUN. Processes wherein steam is admitted to the top of a bed of incandescent fuel, passes through, and the resultant gas drawn off at the bottom.

CLASS 48—Continued.

208. PROCESSES, WATER, UP-AND-DOWN RUN. Processes in which steam is caused to pass upwardly and downwardly, or, vice versa, through a body or separate bodies of incandescent fuel.
209. PROCESSES, WOOD. Processes for gasifying wood, sawdust, peat, or other vegetable matter. The gas generated may be carbureted or have added to it oil or oil gas or other gas.
Search Class—
 202—CHARCOAL AND COKE, subclass 2, Charcoal, Processes.
210. PROCESSES, COAL. Methods for generating gas from coal.
211. PROCESSES, OIL. Processes for gasifying oil.
212. PROCESSES, OIL, AIR-INJECTED. Processes where oil and air are injected into a heated retort. The air may be added to the gas produced from the oil.
213. PROCESSES, OIL, GAS-INJECTED. Processes wherein oil and gas are injected into a highly heated retort.
214. PROCESSES, OIL AND STEAM INJECTED. Processes wherein oil and steam or water are injected into a highly heated retort.
215. PROCESSES, OIL AND STEAM INJECTED, AIR. Processes wherein oil, steam, and air are injected into a highly heated retort. The air may be added to and mixed with the gas resulting from the decomposition of the oil and steam or water.
216. PROCESSES, ACETYLENE. Processes for generating acetylene gas by the mutual decomposition of calcium carbide and water and for preparing calcium carbide for such use. This subclass covers processes of the first type.
217. PROCESSES, ACETYLENE, SLOW. Processes in which a retarded generation of acetylene is produced in contradistinction to the usual rapid generation.
Search Class—
 43—GAS, HEATING AND ILLUMINATING, subclass 60, Acetylene, Carbide cartridges, Conglomerate.
218. PROCESSES, ACETYLENE, TREATMENT OF CALCIUM CARBIDE. Processes for preparing carbide for slow generation and protecting the same from atmospheric influences.
Search Class—
 43—GAS, HEATING AND ILLUMINATING, subclass 60, Acetylene, Carbide cartridges, Conglomerate.
219. PROCESSES, CARBURETING. Processes for carbureting air or gas generally by passing the same in contact with a hydrocarbon liquid.
220. PROCESSES, PURIFYING. Processes for removing impurities—such as ammonia and its compounds, sulphur and its compounds—from gas.
Search Class—
 43—GAS, HEATING AND ILLUMINATING, subclass 224, Compositions, Purifying.
221. PROCESSES, STORAGE. Processes for storing gases, mainly by mechanically suspending the gas by absorption.
Search Classes—
 105—RAILWAY ROLLING STOCK, subclass 264, Cars, Freight, Tank.
 220—METALLIC SHIPPING AND STORING VESSELS, subclasses, 108, Casks and 125, Tanks, and subclasses thereunder.
 330—AIR AND GAS PUMPS, subclass 25, Receivers.
222. ABOLISHED.
223. ABOLISHED.
224. COMPOSITIONS, PURIFYING. Materials and compositions of matter through which the gas to be purified is passed.
Search Class—
 43—GAS, HEATING AND ILLUMINATING, subclass 197, Processes.

CLASS 49.—GLASS.

DEFINITIONS.

Class.

This class includes the entire art of making glass, working it while in a molten, soft, or plastic state, with the exceptions noted below, and reheating, annealing, and "cutting" it to sever into parts when in a hard state. Other operations on hard glass are classed with the proper functional classes. Cutting by abrasion to make "cut glass" is in class 51, GRINDING AND POLISHING. Frosting to make "ground glass" and the like is in class 41, ORNAMENTATION. Coating and painting are in class 91, COATING.

Electric furnaces and electric-furnace processes for making glass in which the electric heating device is more than a mere substitute for other forms of heating devices which might be used without changing the invention are classed in class 204, ELECTROCHEMISTRY. Those in which an arc is used are practically all of that nature.

This class includes apparatus and processes for making electric incandescent lamps which are limited to the usual glass-working operations classed in this class, such as blowing, drawing, perforating, reshaping, polishing, annealing, severing, welding, etc.; but when these operations are combined with other operations not capable of general use—such as flashing, mounting, or welding the filaments, forming conductors from the joint, and the like—the inventions belong in class 176, ELECTRIC LAMPS. Uniting, welding, and sealing by operations on the glass while in a soft or plastic state are included in this class only when amounting to no more than the uniting of glass to glass or to wire and are excluded when involving in any degree the structure of the joint or the relative arrangement of the parts of the lamp.

Uniting hard glass to hard glass or metal by cementing is excluded. (See note to subclass 81.)

Uniting glass to other materials and making composite articles are included only when the glass alone is worked.

Specific glass articles are not included in this class except those in which the entire invention lies in the structure or characteristics of the glass itself independent of those of the particular article in which it happens to be embodied.

Glass consists of a double silicate or a combination of two or more silicates, of an alkali and another metal, usually in combination with other materials, as coloring or decoloring oxids, which is fusible at ordinary high furnace temperatures and when softened by heat passes through a prolonged plastic stage in which it may be easily worked, drawn out into fine threads, and blown, and when cold is hard and brittle and not easily acted upon by any acids except fluorine. It is usually formed by the fusion of silica with oxids of potassium, sodium, iron, lead, aluminium, calcium, etc., with other matter, as coloring or decoloring oxids.

Other bodies than silica are capable of entering into vitreous fusion, as phosphoric acid, boric acid, arsenic acid, and the products of such fusion with the metallic oxids are called "glasses" and included in this class.

Enamel is a glass falling under the definition above given; but the enamels are usually made from feldspar, boric acid, silica, and some form of clay, with coloring metallic oxids, etc., and are used only for glazing surfaces of ceramics, metals, glass, and other materials.

Such vitreous enamel compositions and their manufacture are included in this class; but the application of enamels to surfaces is included in classes 18, PLASTICS; 41, ORNAMENTATION, and 91, COATING, according to the nature of the operation, and kilns and processes for firing them are in class 25, PLASTIC BLOCK AND EARTH-ENWARE APPARATUS.

Subclasses.

1. COMBINED MACHINES. Machines and plants for performing two or more distinct operations not classifiable in any of the subclasses under this title.

Note.—See definitions of subclasses 17, Drawing; 18, Blowing, and 22, Reshaping, in this class.

Search Classes—

18—PLASTICS, subclass 4, Molding plants.

107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 4, Combined machines.

2. COMBINED MACHINES, INCANDESCENT-LAMP MAKING. Machines and plants for making incandescent-electric lamp bulbs which include more than one distinct operation. Those which are confined to one operation are classified with the proper functional subclass, as Blowing, Annealing, Miscellaneous, etc.

3. COMBINED MACHINES, SHEET AND PLATE MAKING. Machines and plants for making plate, window, and other sheet glass involving more than one distinct operation. Those limited to a single operation are classified with the proper functional subclasses, as Drawing, Casting, Rolling, Flattening, Miscellaneous, and those involving flattening and annealing and no other operation are classified in subclass 4, Combined machines, sheet and plate making, flattening, and annealing. Making wire-glass and prism-glass and the like in sheet form are included under the same conditions.

Search Class—

18—PLASTICS, subclass 4, Molding plants.

CLASS 49—Continued.

4. COMBINED MACHINES, SHEET AND PLATE MAKING, FLATTENING AND ANNEALING. Machines and plants for flattening glass and then annealing, usually for making window-glass from split cylinders.

5. COMBINED MACHINES, CHARGING, CUTTING, AND MOLDING. Machines and plants which charge molds and involve cutting or shearing the plastic glass as it is placed in the molds or while in the mold, sometimes measuring or weighing it at the same time. The molding device is usually a part of the combination. Machines in which the cutting is performed after the article is molded are excluded.

6. COMBINED MACHINES, SHAPING AND CUTTING. Machines and plants for first shaping, molding, or reshaping soft glass in any way and then cutting it either before or after hardening.

7. COMBINED MACHINES, REHEATING AND RESHAPING. Machines and plants for first reheating glass blanks and then performing some reshaping or finishing operation on the soft glass.

Note.—Finishing operations performed on hard glass are not included. Furnaces which merely melt the edges of an article which in itself is the finishing operation are under subclass 57, Reheating-furnaces, under Heating apparatus.

8. COMBINED MACHINES, PRESSING AND BLOWING. Machines and plants for first compressing by mechanical, pneumatic, or other means and then blowing the glass in a single mold which does not have a descending bottom. May include in combination means for casting or manipulating the blowpipe.

Search Class—

49—GLASS, subclasses 9, Combined machines, Pressing and blowing, In separate molds; 10, Combined machines, Pressing and blowing, In separate molds, Internal press-mold, and 11, Combined machines, Pressing and blowing, Descending mold-bottom.

9. COMBINED MACHINES, PRESSING AND BLOWING, IN SEPARATE MOLDS. Machines and plants for pressing a blank or parison in one mold and then blowing it in another, the press-mold not being contained within the blow-mold at any stage of the operation. There is usually means for transferring the article from the press-mold to the blow-mold consisting of a moving neck-mold.

Search Class—

49—GLASS, subclass 13, Combined machines, Casting and blowing, In separate molds.

10. COMBINED MACHINES, PRESSING AND BLOWING, IN SEPARATE MOLDS, INTERNAL PRESS-MOLD. Machines and plants for pressing glass in a parison-mold contained within a blow-mold, withdrawing the former, leaving the article suspended in the latter, and then blowing it in the blow-mold.

Search Class—

49—GLASS, subclass 11, Combined machines, Pressing and blowing, Descending mold-bottom.

11. COMBINED MACHINES, PRESSING AND BLOWING, DESCENDING MOLD-BOTTOM. Machines for pressing a parison in the top of the blow-mold by means of a plunger, which later descends and forms the bottom of the blow-mold, and then blowing it in the blow-mold.

Search Class—

49—GLASS, subclass 10, Combined machines, Pressing and blowing, In separate molds, Internal press-mold.

12. COMBINED MACHINES, CASTING AND BLOWING. Machines for first casting a parison without pressure and then blowing it without transferring it to another mold. The mold is usually inverted after casting. Means for introducing the glass or charging the mold is not included.

Search Class—

49—GLASS, subclasses 8, Combined machines, Pressing and blowing, and 13, Combined machines, Casting and blowing, In separate molds.

13. COMBINED MACHINES, CASTING AND BLOWING, IN SEPARATE MOLDS. Machines and plants for casting a blank or parison without pressing, placing it in another mold, and blowing it.

Search Class—

49—GLASS, subclasses 9, Combined machines, Pressing and blowing, In separate molds, and 10, Combined machines, Pressing and blowing, In separate molds, Internal press-mold.

14. MISCELLANEOUS. Machines for performing a single function not classifiable in any of the following subclasses. Includes devices for cutting soft glass.

Search Class—

49—GLASS, subclasses 1, Combined machines; 2, Combined machines, Incandescent-lamp making; 3, Combined machines, Sheet and plate making; 5, Combined machines, Charging, cutting, and molding, and 6, Combined machines, Shaping and cutting.

CLASS 49—Continued.

15. MISCELLANEOUS, TOOLS. Hand-operated and hand-supported implements for use in this art, except for blowing, finishing, molding, and cutting hard glass.
16. PIN-HEADING. Apparatus for forming glass heads on pins.
Search Class—
18—PLASTICS, subclass 24, Molding devices, Dipping.
17. DRAWING. Machines for shaping glass by drawing directly from a tank or furnace or by stretching a previously formed blank. May include, in combination, the tanks or other heating or melting devices, means for cooling and shaping the glass as it takes its preliminary form, means for taking the article away, etc.
Note.—Drawing apparatus combined with other devices are classified in the combined machine subclasses.
Search Classes—
49—GLASS, subclass 83.1, Processes, Drawing, and 18, PLASTICS, subclass 8, Molding devices, Filament forming.
- 17.1. DRAWING, CYLINDERS. Machines for drawing glass cylinders directly from a tank or furnace or for stretching a previously formed blank to form a cylinder or tube.
Search Class—
49—GLASS, subclasses 17, Drawing, and 83.1, Processes, Drawing.
18. BLOWING. Machines for blowing glass, except those having means for manipulating the blow-irons or moving the molds. Includes blow-molds having specific means for the introduction of the blowing fluid or for exhaustion. When a mold is used, it is either stationary or merely rotates on its axis to smooth the article. The blow-iron sometimes rotates on its axis for the same purpose.
Search Class—
49—GLASS, subclasses 8, Combined machines, Pressing and blowing, and the subclasses thereunder, and 12, Combined machines, Casting and blowing, and 13, Combined machines, Casting and blowing, in separate molds.
19. BLOWING, TRAVELING MOLD. Blowing-machines in which the mold is moved by the machine during its operation, except those in which the mold is merely rotated on the axis of the article being blown. The blow-iron is sometimes moved with the mold.
Search Class—
49—GLASS, subclasses 13, Combined machines, Casting and blowing, in separate molds, and 37, Molding, Presses, Traveling mold.
20. BLOWING, MANIPULATING BLOW-IRON. Blowing-machines without traveling molds, in which the blow iron or tool is given a motion by the machine other than rotation about its own axis. Includes supports for the irons.
Search Class—
49—GLASS, subclass 62, Gathering and ladling.
21. BLOWING, TOOLS. Irons and tubes for blowing glass adapted to be supported and operated by hand or attached to a machine. Some include a hand-pump or bellows for forcing air through the pipe and means for rotating them so long as they satisfy the conditions above.
Search Classes—
75—METALLURGY, subclass 90, Blowpipes.
158—LIQUID AND GASEOUS FUEL BURNERS, subclass 109, Pressure burners.
22. RESHAPING. Apparatus and tools for reshaping or finishing previously-formed blanks while in a soft or plastic state, not involving heating or neck-forming nor limited to flaring, spreading, or crimping. Usually the reshaping and polishing are performed simultaneously and by the same means. Does not include polishing or otherwise finishing hard glass.
Search Classes—
49—GLASS, subclasses 7, Combined machines, Reheating and reshaping; 23, Reshaping, Neck-forming, and 29, Molding.
18—PLASTICS, subclass 5, Molding devices.
23. RESHAPING, NECK-FORMING. Machines for forming necks on bottles, jars, and the like while in a soft or plastic state. Usually includes polishing done simultaneously with the shaping and by the same means.
Search Class—
49—GLASS, subclass 22, Reshaping.
24. RESHAPING, NECK-FORMING, TOOLS. Hand-supported and hand-operated implements for forming necks on bottles, jars, and the like while in a soft or plastic state, in which the mandrel that enters the mouth of the article is in one piece or the pieces are rigidly connected. They usually polish simultaneously with the shaping.
Search Class—
49—GLASS, subclasses 23, Reshaping, Neck-forming; 25, Reshaping, Neck-forming, Tools, Divided mandrel, and 27, Reshaping, Spreading or flaring.
25. RESHAPING, NECK-FORMING, TOOLS, DIVIDED MANDREL. Hand-supported and hand-operated tools for neck-forming, in which the mandrel that enters the mouth of the article is in two or more parts, some or all of which are movable to contact with the glass or shape the inside of the article. Many have undercutting plungers capable of being withdrawn within the mandrel.
Search Class—
49—GLASS, subclasses 23, Reshaping, Neck-forming; 27, Reshaping, Spreading or flaring, and 76, molds, Cores and plungers.

CLASS 49—Continued.

26. RESHAPING, CRIMPING. Apparatus for crimping or corrugating previously-formed blanks while in a soft or plastic state. Sometimes includes flaring in combination with crimping.
27. RESHAPING, SPREADING OR FLARING. Apparatus for spreading or flaring blanks while in a soft or plastic state to make the bottoms and tops of lamp-chimneys, tops of pitchers, etc. Some include means for opening the end of the blown blank; but this is usually a part of the spreading device.
Search Class—
49—GLASS, subclass 26, Reshaping, Crimping.
28. PERFORATING. Devices for perforating previously-formed articles and blanks.
Search Class—
49—GLASS, subclass 27, Reshaping, Spreading or flaring.
29. MOLDING. Machines for molding other articles than wire-glass and curved or vertical pipes and tubes from a shapeless mass in other ways than by rolling, pressing, casting, blowing, and drawing, and combinations of any number of molding operations not including blowing or drawing. Also includes hand-supported and hand-operated tools for this purpose. Does not include reshaping previously-formed blanks nor mere molds.
Search Classes—
49—GLASS, subclass 22, Reshaping.
18—PLASTICS, subclasses 5, Molding devices, and 15, Molding devices, Film-spreading.
25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 7, Soap-molding devices, and 41, Block-molding machines.
107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 8, Molding apparatus.
30. MOLDING, CURVED PIPES AND TUBES. Apparatus for molding curved pipes and tubes in other ways than by blowing or drawing. A mold is always used; but there is always something more, as means for forcing the core.
31. MOLDING, VERTICAL PIPES AND TUBES. Apparatus for molding pipes and tubes in vertical molds and in other ways than by blowing or drawing. The core usually moves vertically into and out of the mold.
Search Class—
25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 30, Pipe-machines.
32. MOLDING, WIRE-GLASS. Apparatus for making wire-glass by molding.
Search Class—
18—PLASTICS, subclass 11, Molding devices, Rolling, Compound.
33. MOLDING, ROLLING. Apparatus for forming glass from a plastic mass by a rolling operation, except to make wire-glass and except those consisting of a bed and roller. Means for pouring the glass is not included, but a chute or guide for directing it to the rollers may be. Improvements in rollers alone are included.
Search Classes—
18—PLASTICS, subclasses 9, Molding devices, Rolling, and 10, Molding devices, Rolling, Sheet.
25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 21, Roller-forming.
107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 10, Molding apparatus, Rolling, and 12, Molding apparatus, Rolling, Sheet.
207—PLASTIC METAL WORKING, subclass 14, Gravity molding, By rolls.
34. MOLDING, ROLLING, BED AND ROLLER. Machines for rolling glass involving a bed, platen, platform, or belt on which the mass of glass is placed to be rolled out by a roller, except for making wire-glass. Includes improvements in the beds alone, but not in the rollers alone.
Search Classes—
49—GLASS, subclass 32, Molding, Wire-glass.
18—PLASTICS, subclasses 9, Molding devices, Rolling, and 10, Molding devices, Rolling, Sheets.
107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 10, Molding apparatus, Rolling, and 12, Molding apparatus, Rolling, Sheet.
35. MOLDING, PRESSES. Presses and parts of presses for molding glass using a stationary mold, not operated by fluid-pressure, and for molding other articles than screw-threaded ones.
Search Classes—
49—GLASS, subclasses 5, Combined machines, Charging, Cutting, and Molding; 8, Combined machines, Pressing and blowing, and the subclasses thereunder.
18—PLASTICS, subclasses 16, Molding devices, Presses; 17, Molding devices, Presses, Heating and vulcanizing, and 23, Molding devices, Presses, Stationary mold.
25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 10, Soap-molding devices, Stationary mold; 27, Pottery-machines, Presses; 28, Pottery-machines, Presses, Bottom ejectors; 30, Pipe-machines; 35, Pipe-machines, Perforating-former; 36, Pipe-machines, Compacting-former; 45, Block-presses; all subclasses under Block-presses, Stationary mold; 101, Block-presses, Expanding mold; 102, Block-presses, Plungers, and 103, Block-presses, Chargers.
100—PRESSES, all appropriate subclasses.
107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 15, Molding apparatus, Presses, and 18, Molding apparatus, Presses, Tablet, Stationary mold.

CLASS 49—Continued.

36. **MOLDING, PRESSES, SCREW-THREADING.** Presses for molding screw-threaded articles, usually with means for withdrawing a screw-threaded core or die.

37. **MOLDING, PRESSES, TRAVELING MOLD.** Presses for molding glass in which the mold is given a motion of translation, usually between molding operations. Does not include portable presses unless satisfying the other conditions.

Search Classes—

49—GLASS, subclasses 5, Combined machines, Charging, Cutting, and Molding; 13, Combined machines, Casting and blowing, in separate molds, and 19, Blowing, Traveling mold.

18—PLASTICS, subclasses 20, Molding devices, Presses, Rotary-mold support; 21, Molding devices, Presses, Rotary-mold support, Peripheral, and 22, Molding devices, Presses, Reciprocating mold.

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 9, Soap-molding devices, Rotary mold; all subclasses under Block-presses, Portable mold; all subclasses of 54, Block-presses, Reciprocating mold; also subclasses of Block-presses, Rotary mold, and the subclasses under Block-presses, Endless chain of molds.

107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 15, Molding apparatus, Presses, and 17, Molding apparatus, Presses, Tablet.

38. **MOLDING, PRESSES, FLUID-OPERATED.** Glass-molding presses in which the plunger is operated by fluid-pressure. Does not include those in which the fluid-motor is shown and claimed broadly as a means for operating the machine and could readily be replaced by other motive power without affecting the invention.

Search Class—

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 31, Pipe-machines, Fluid-operated, and 63, Block-presses, Rotary mold, Fluid-operated.

39. **MOLDING, CASTING.** Apparatus for casting glass from a ladle or its equivalent, usually into molds, where it takes its form by gravity. Includes casting-tables and the like, either in combination or not, but not molds *per se* nor apparatus which involves means for taking the glass from the furnace.

Search Classes—

49—GLASS, subclasses 5, Combined machines, Charging, Cutting, and Molding; 31, Molding, Vertical pipes and tubes, and 62, Gathering and lading.

18—PLASTICS, subclass 26, Molding devices, Casting.

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 29, Pottery-machines, Casting.

40. **MOLD-COOLERS.** Devices for cooling pastes and other molds which contain more than mere passages in the mold-walls (classified in Molds, cooling and heating) and not combined with other parts of the press or blowing-machine, except means for separating the parts of the mold or immersing it in a cooling-bath.

Search Class—

49—GLASS, subclass 19, Blowing, Traveling mold.

41. **MOLD SUPPORTS AND CARRIERS.** Devices for supporting or carrying glass-molds and for attaching them to any part of a molding-machine when not combined with a press or other machine. May include in combination novelty in means for separating the parts of the mold or in the mold.

Search Class—

49—GLASS, subclasses 5, Combined machines, Charging, Cutting, and Molding; 8, Combined machines, Pressing and blowing, and the subclasses thereunder; 12, Combined machines, Casting and blowing; 13, Combined machines, Casting and blowing, in separate molds; 18, Blowing; 19, Blowing, Traveling mold; 30, Molding, Curved pipes and tubes; 35, Molding, Presses, and the subclasses thereunder, and 40, Mold-coolers.

42. **MOLD-SEPARATING DEVICES.** Devices for separating the parts of molds, except drawing cores. Includes means for closing them.

Search Classes—

49—GLASS, subclasses 19, Blowing, Traveling mold; 23, Reshaping, Neck-forming, and the subclasses thereunder, and 40, Mold-coolers.

13—PLASTICS, subclasses 19, Molding devices, Presses, Sheet-shaping; 22, Molding devices, Presses, Reciprocating mold, and 23, Molding devices, Presses, Stationary mold.

43. **MOLD-SEPARATING DEVICES, DRAWING CORE.** Devices for withdrawing cores, plungers, and undercut parts from the article, so that it can be removed or freed from a part of the mold. Includes the mold in combination.

Search Classes—

49—GLASS, subclasses 10, Combined machines, Pressing and blowing, in separate molds, Internal press-mold; 11, Combined machines, Pressing and blowing, Descending mold-bottom; 23, Reshaping, Neck-forming; 30, Molding, Curved pipes and tubes; 31, Molding, Vertical pipes and tubes, and 35, Molding, Presses, and the subclasses thereunder.

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 44, Block-molding machines, Undercutting.

44. **FLATTENING.** Apparatus for flattening split cylinders or other glass articles to make window and other sheet glass. Includes furnaces and flattening-tables, but not when in combination with annealing apparatus.

Search Class—

49—GLASS, subclass 4, Combined machines, Sheet and plate making, Flattening and annealing.

CLASS 49—Continued.

45. **ANNEALING.** Plants, appliances and attachments for annealing glass where the invention does not cover or is not limited to a mere furnace, oven, kiln, or lehr or to a conveying device therein for the glass. Includes lehr-pans, baths, and combinations of furnaces with baths.

Search Class—

148—ANNEALING AND TEMPERING, subclass 13, Annealing apparatus.

46. **ANNEALING, FURNACES.** Furnaces, ovens, kilns, and lehrs for heating or for cooling glass to anneal it without any other action and without conveying means for the glass in the oven. Does not include combinations consisting of two or more furnaces.

Search Classes—

49—GLASS, subclasses 4, Combined machines, Sheet and plate making, Flattening and annealing, and 47, Annealing, Furnaces, Conveying.

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 132, Kilns; 133, Kilns, Indurating; 134, Kilns, Continuous, and the subclasses thereunder; 140, Kilns, Combined up and down draft; 141, Kilns, Combined up and down draft, Reversible; 144, Kilns, Muffle; 145, Kilns, Down draft; 146, Kilns, Down draft, Muffle-bottom; 147, Kilns, Up draft; 148, Kilns, Forced-draft; 149, Kilns, Fluid-fuel; 150, Kilns, Steam-combustion; 151, Kilns, Furnaces, and 152, Kilns, Furnaces, Grates.

148—ANNEALING AND TEMPERING, subclass 17, Annealing apparatus, ovens.

47. **ANNEALING, FURNACES, CONVEYING.** Conveyers for carrying glass through annealing-furnaces, etc., and combinations thereof with the furnace, lehr, etc.

Search Classes—

49—GLASS, subclasses 4, Combined machines, sheet and plate making, Flattening and annealing, and 44, Flattening.

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 142, Kilns, horizontally-traveling material, and 143, Kilns, vertically-traveling material.

148—ANNEALING AND TEMPERING, subclass 18, Annealing apparatus, ovens, rotary hearths.

48. **CUTTING HARD GLASS.** Miscellaneous machines for marking on the surface of hard glass preparatory to breaking it and for breaking it—that is, performing the operation commonly known as "cutting."

Note.—Does not include grinding or abrading, which is classed in class 51, GRINDING AND POLISHING.

Search Classes—

49—GLASS, subclass 49, Cutting hard glass, lens-blanks.

159—ENGRAVING.

164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 71, Cutting, machines, sweep-cutter, and 72, Cutting, machines, sweep-cutter, elliptical work.

49. **CUTTING HARD GLASS, LENS-BLANKS.** Apparatus for cutting out lenses of circular or elliptical form.

Search Classes—

33—DRAFTING, subclass 5, Ellipsographs.

164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 63, Cutting, Machines, Rotary Cutter, Curved-plate work, and 72, Cutting, Machines, Sweep-cutter, Elliptical work.

50. **CUTTING HARD GLASS, HEAT-APPLYING.** Apparatus for cutting hard glass in which the cutting or cracking is effected solely by the application of heat or heat and cold. Those which have means for marking or scoring before applying the heat are not included except as cross-references.

51. **CUTTING HARD GLASS, GUIDES AND GAGES.** Guides and gages adapted for use in cutting hard glass not combined with means for operating the tools or other parts. May include the tool in combination.

Search Classes—

33—DRAFTING, subclasses 2, Curve-scribers; 5, Ellipsographs; 9, Scribers; 15, Drawing-boards; 18, Rulers, and 20, Rulers, slate and blackboard.

159—ENGRAVING.

164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 59, Cutting Machines, Reciprocating cutter, Gages; 78, Cutting, Machines, Cutting-tables, and 82, Cutting, Implements, Sweep.

52. **CUTTING HARD GLASS, TOOLS.** Hand-operated and hand-supported tools for marking and cutting hard glass. Some carry an adjustable gage or a breaking device, but not otherwise combined with guides or gages.

Search Classes—

125—STONE-WORKING, subclass 4, Diamond tools.

164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 82, Cutting, Implements, Sweep.

53. **HEATING APPARATUS.** Miscellaneous glass heating and melting apparatus, plants, furnaces, and attachments.

Note.—The mere combustion of fuel is included in classes 110, FURNACES, and 158, LIQUID AND GASEOUS FUEL BURNERS, even when shown and claimed in a glass-furnace, unless in combination with specific means for applying the heat to the glass.

Search Class—

49—GLASS, subclasses 7, Combined machines, Reheating and reshaping, and 57, Heating apparatus, Reheating-furnaces.

CLASS 49—Continued.

54. **HEATING APPARATUS, TANK-FURNACES.** Furnaces for melting glass in a tank without a separate gathering-compartment and without means for delivering the glass from the furnace. Some have a pot-hearth in combination with the tank or a place for reheating the glass or irons.

55. **HEATING APPARATUS, TANK-FURNACES, DELIVERING.** Tank-furnaces having means for delivering or discharging the glass. Includes delivering means when not in combination with any specific part of the furnace. Does not include gathering or ladling devices. Those which shape the glass when issuing from the furnace, as by dies, are included only as cross-references.

Search Class—

49—GLASS, subclass 17, Drawing.

56. **HEATING APPARATUS, TANK-FURNACES, SEPARATE GATHERING-POOL.** Tank-furnaces in which the gathering part is separated from the melting part by a bridge, dam, or its equivalent. Includes those having additional features, as places for heating irons or glass during blowing, etc.

57. **HEATING APPARATUS, REHEATING-FURNACES.** Glory-hole and other furnaces for reheating glass articles to finish them and for heating irons without means for manipulating the articles. Flattening-tables are included in subclass 44, Flattening, in this class.

Search Class—

49—GLASS, subclasses 7, Combined machines, Reheating and reshaping; 53, Heating apparatus, and 58, Heating apparatus, Reheating-furnaces, Work-manipulating.

58. **HEATING APPARATUS, REHEATING-FURNACES, WORK-MANIPULATING.** Glory-hole and other furnaces for reheating glass articles to finish them in combination with means for feeding, rotating, or otherwise manipulating the articles, but without means for shaping or polishing them. Such manipulating devices are included even when not combined with the furnace. Furnaces having a mere support for the punty-rod are not included.

Search Class—

49—GLASS, subclass 7, Combined machines, Reheating and reshaping.

59. **HEATING APPARATUS, POT-FURNACES.** Furnaces having a hearth-seat or sieve for supporting melting-pots and not having a tank or other means than the pots for containing glass nor means for removing the glass or pots.

60. **HEATING APPARATUS, MELTING-POTS.** Pots especially adapted for being set in a pot-hearth furnace for melting glass.

Note.—Those adapted for melting both glass and metal are included in class 75, METALLURGY, subclass 182, Crucibles.

61. **HEATING APPARATUS, FLOATS.** Floating rings, bridges, and the like for tank-furnaces and melting-pots used for skimming.

62. **GATHERING AND LADLING.** Apparatus for manipulating a gathering iron or ladle to introduce it into molten glass or withdraw it, combined or not with means for swinging the iron, for introducing a blowing fluid into the iron where hollow, or for transferring the iron or ladle to the mold and discharging the mold; but the last step is not included when a cutting-off device is combined with it. Gathering-irons are included when adapted for blowing—i. e., hollow.

Search Class—

49—GLASS, subclasses 5, Combined machines, Charging, Cutting, and molding, and 20, Blowing, Manipulating blow-iron.

63. **BATCH-MIXERS.** Apparatus for mixing the ingredients of glass before melting.

Search Classes—

91—COATING, subclass 57, Mixers and stirrers.

107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 30, Mixers, kneaders, and beaters; 32, Mixers, kneaders, and beaters, Moving receptacle; 33, Mixers, kneaders, and beaters, Moving receptacle, Rotating; 34, Mixers, kneaders, and beaters, Roller; 36, Mixers, kneaders, and beaters, Rotary dasher, Multiple; 38, Mixers, kneaders, and beaters, Rotary dasher, Single, and 40, Mixers, kneaders, and beaters, Rotary dasher, Single, Horizontal.

64. **SNAPS AND SOCKETS.** Tools for gripping or holding glass articles while being reheated, finished, or otherwise treated.

Search Class—

240—ILLUMINATION, subclass 101, Globes, Manipulators.

65. **MOLDS.** Molds for use in this art not falling in any of the subclasses indented hereunder and not combined with any part of a press except the plunger nor with blowing, cooling, heating, mold-moving, or other mechanism exterior to the mold. May include a mere handle for opening and closing the parts, but no more complicated means for doing that.

Note.—Digests of mold materials will be found in class 18, PLASTICS, subclass 47, Molding devices, Molds, Materials.

Search Classes—

49—GLASS, subclasses 66, Molds, Uniting parts, and 68, Molds, Cooling or heating.

18—PLASTICS, subclasses 34, Molding devices, Molds; 35, Molding devices, Molds, Sheet-shaping; 39, Molding devices, Molds, Casting; 42, Molding devices, Molds, Two and three part; 44, Molding devices, Molds, Dies and matrices.

CLASS 49—Continued.

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 118, Molds, and 119, Molds, Blocks, and the subclasses thereunder; 126, Molds, Pipe, and 129, Molds, Pottery.

107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 19, Molding apparatus, Molds.

66. **MOLDS, UNITING PARTS.** Molds constructed to hold a blank or part of an article while plastic glass is molded onto it.

Search Classes—

49—GLASS, subclass 82, Processes, Uniting parts, Glass to glass.

18—PLASTICS, subclasses 36, Molding devices, Molds, Blank covering and filling, and 37, Molding devices, Molds, Blank covering and filling, Lacing hooks and studs.

67. **MOLDS, BENDING.** Molds adapted only for bending sheet-glass without blowing or pressing. Usually the sheet of glass is heated and being put on the mold sinks to the form of the mold.

68. **MOLDS, COOLING OR HEATING.** Molds combined with cooling or heating means forming part of the mold, usually passages in the mold-walls. Those simply intended to be cooled or heated by external means not forming part of the mold are not included, nor are devices external to the mold for this purpose.

Search Class—

18—PLASTICS, subclass 38, Molding devices, Molds, Heating and vulcanizing.

69. **MOLDS, BLOWING.** Molds which are only useful for forming articles by blowing and without means for venting or labeling. May include, broadly, a blow-iron, but not if there is any improvement in it nor if it is so connected as to aid in operating a part of the mold. Those adapted for also performing another operation as pressing or casting, are not included, except as cross-references.

Search Class—

49—GLASS, subclasses 12, Combined machines, Casting and blowing; 41, Mold supports and carriers; 42, Mold-separating devices; 66, Molds, Uniting parts; 70, Molds, Blowing, Labeling, and 71, Molds, Blowing, Vented.

70. **MOLDS, BLOWING, LABELING.** Blowing-molds having movable or stationary means for forming labels, letters, and the like on the article blown.

71. **MOLDS, BLOWING, VENTED.** Blowing-molds having means for allowing the escape of air and gases therefrom.

72. **MOLDS, PRESSING.** Molds adapted for compressing the glass by being placed in a press or the like and not falling under the next two definitions. Usually have a plunger as part of the mold, but no other part of the press.

Search Classes—

49—GLASS, subclass 74, Molds, Pressing, Helically-separable.

18—PLASTICS, subclasses 34, Molding devices, Molds; 35, Molding devices, Molds, Sheet-shaping; 39, Molding devices, Molds, Casting; 42, Molding devices, Molds, Two and three part, and 44, Molding devices, Molds, Dies and matrices.

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 118, Molds, and 119, Molds, Block, and the subclasses thereunder, and 126, Molds, Pipe.

107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 19, Molding apparatus, Molds.

73. **MOLDS, PRESSING, Laterally-separable sides.** Pressing molds in which at least two side pieces are separable laterally from the article, the top and bottom being separable in any way or integral with the sides.

Search Classes—

49—GLASS, subclasses 42, Mold-separating devices; 69, Molds, Blowing; 70, Molds, Blowing, Labeling; 71, Molds, Blowing, Vented, and 74, Molds, Pressing, Helically-separable.

107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 19, Molding apparatus, Molds.

74. **MOLDS, PRESSING, HELICALLY-SEPARABLE.** Pressing-molds in which the plunger or some other part is separable from the article by a helical motion—i. e., by unscrewing. Usually for molding screw-threads. Does not include mechanism for unscrewing the parts.

Search Class—

49—GLASS, subclass 36, Molding, Presses, Screw-threading.

75. **MOLDS, CLAMPING.** Means for clamping the parts of molds together, but without operating means. May include the mold broadly in combination, but not the specific improvements therein.

Search Classes—

49—GLASS, subclass 42, Mold-separating devices.

18—PLASTICS, subclass 43, Molding devices, Molds, Clamping.

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 119, Molds, Block; 120, Molds, Block, Ejectors, and 126, Molds, Pipe.

131—TOBACCO, subclass 5, Cigar-machines.

76. **MOLDS, CORES AND PLUNGERS.** Inventions wherein the entire improvement lies in the core or plunger.

Search Classes—

49—GLASS, subclasses 22, Reshaping, and the subclasses thereunder, and 68, Molds, Cooling or heating.

18—PLASTICS, subclass 45, Molding devices, Molds, Cores.

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 22, Pottery-machines; 44, Block-molding machines, Undercutting; 128, Molds, Pipe, Cores, and 130, Molds, Sarcophagi and tank.

CLASS 49—Continued.

77. PROCESSES, PROCESSES OF MAKING AND WORKING GLASS LIMITED TO A SINGLE KIND OF OPERATION AND NOT CLASSIFIABLE IN ANY OF THE SUBCLASSES INDENTED HEREUNDER AND NOT CONSISTING MERELY IN MAKING GLASS OR ENAMEL BY COMBINING CERTAIN INGREDIENTS. Includes processes consisting of any number of steps all tending to produce a single result.

Search Classes—

- 49—GLASS, subclass 79, Processes, Combined.
18—PLASTICS, subclass 48, Processes, Miscellaneous.

78. PROCESSES, INCANDESCENT-LAMP MAKING. Single processes of making or sealing electric incandescent lamps, X-ray tubes, Geissler tubes, etc., as are included in this class by the general definition. Does not include the mere manufacture of the globes.

Search Classes—

- 49—GLASS, subclasses 2, Combined machines, Incandescent-lamp making; 81, Processes, Uniting parts, and 82, Processes, Uniting parts, Glass to glass.
176—ELECTRIC LAMPS, subclasses 2 to 7, inclusive, under Manufacture and Repair.

- 78.1. PROCESSES, QUARTZ GLASS. Processes for making glass from quartz or silica by fusion or of working the same.

Search Class—

- 204—ELECTROCHEMISTRY, subclass 64, Electric furnaces, where the use of an electric furnace is involved.

79. PROCESSES, COMBINED. Processes of making and working glass involving more than one distinct class of operations, except molding and blowing. Processes involving several steps all cooperating to produce a single result, as annealing, molding, uniting parts, and the like, are not regarded as combined processes.

Search Classes—

- 18—PLASTICS, subclass 48, Processes, Miscellaneous.
176—ELECTRIC LAMPS, subclasses 2 to 7, inclusive, under Manufacture and Repair.

80. PROCESSES, COMBINED, MOLDING AND BLOWING. Processes including and limited to molding a blank or parison and then blowing it. Either the preliminary molding process or the blowing process may include more than one step, so long as no other function is performed, and reshaping steps performed after blowing are also included. Does not include molding one part, blowing another, and uniting them, nor blowing a part onto a previously-molded blank, unless there is a combined molding and blowing on the same part of the article. In that case uniting is included in combination. Does not include processes of blowing a blank previously formed by molding when such molding is not a part of the process claimed. Does not include processes of blowing a blank or article and then reshaping.

81. PROCESSES, UNITING PARTS. Processes of uniting glass in a soft or plastic condition to other materials except to make wire-glass and incandescent lamps, where the glass is worked to form the union. Some necessarily include annealing, molding, and shaping, but not when it is a distinct and separate operation.

Note.—Processes of uniting hard glass to other materials in order to complete the glass article, as a tile with a roughened back, which are capable of general use and are not capable of classification in any article class, are also included, but processes of uniting lamp pedestals to fonts when the glass is in a hard state and is not worked are classed in class 67, ILLUMINATING BURNERS. Cement compositions for use on glass are included in class 87, OILS, FATS, AND GLUE, subclass 17, Adhesives.

Search Classes—

- 49—GLASS, subclasses 78, Processes, Incandescent-lamp making, and 86, Processes, Molding, Wire-glass.
18—PLASTICS, subclass 59, Processes, Molding, Uniting.
176—ELECTRIC LAMPS, subclasses 2 to 7, inclusive, under Manufacture and Repair.

82. PROCESSES, UNITING PARTS, GLASS TO GLASS. Miscellaneous processes of uniting molten, plastic, or soft glass to soft or hard glass. Some necessarily include molding, shaping, and annealing in combination.

Search Class—

- 18—PLASTICS, subclass 59, Processes, Molding, Uniting.

- 82.1. PROCESSES, UNITING PARTS, GLASS TO GLASS, BIFOCAL LENSES. Processes of uniting molten plastic or soft glass to soft or hard glass for making bifocal lenses.

83. PROCESSES, BLOWING. Processes of blowing glass, including, or not, swinging, whirling, marvering, and the like and dividing the blown blank, but not other molding operations. May also include annealing in combination. Includes blowing a previously-molded blank when not in combination with the process of molding such blank.

Search Class—

- 49—GLASS, subclass 80, Processes, Combined, Molding and blowing.

CLASS 49—Continued.

- 83.1. PROCESSES, DRAWING. Processes of drawing glass sheets, cylinders, etc., directly from a tank or furnace or of stretching a previously-formed blank.

Search Classes—

- 49—GLASS, subclasses 17, Drawing, and 17.1, Drawing, Cylinders, and 18, PLASTICS, subclass 8, Molding devices, Filament forming.

84. PROCESSES, RESHAPING. Processes of reshaping previously-formed blanks, whether reheated or not, and processes of finishing previously-formed blanks in a soft or plastic state. The operation usually reshapes and polishes at the same time. Finishing operations on hard glass are not included.

Search Classes—

- 49—GLASS, subclass 28, Perforating.
18—PLASTICS, subclass 56, Processes, Molding, Sheets.

85. PROCESSES, MOLDING. Processes of molding glass from a shapeless or incompletely-formed mass, as distinguished from reshaping blanks which have been previously formed to nearly the form desired, except for making plate, window, and sheet or wire glass. Some include any number of distinctly molding operations, cooling, and annealing in combination when not a distinct operation.

Search Classes—

- 49—GLASS, subclasses 29, Molding; 80, Processes, Combined, Molding and blowing; 86, Processes, Molding, Wire-glass, and 87, Processes, Molding, Sheets and Plates.
18—PLASTICS, subclasses 54, Processes, Filament-forming; 55, Processes, Molding, and 58, Processes, Molding, Casting and dipping.
107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 54, Processes.

86. PROCESSES, MOLDING, WIRE-GLASS. Processes of making wire-glass by embedding the wire or wire fabric in glass while in a molten, soft, or plastic state. Some necessarily include shaping and annealing in combination.

Search Class—

- 49—GLASS, subclasses 32, Molding, Wire-glass, and 81, Processes, Uniting parts.

87. PROCESSES, MOLDING, SHEETS AND PLATES. Processes of molding glass to make plate, window, and sheet glass not involving reshaping previously-formed sheets. Some include any number of distinctly molding operations, cooling, and annealing in combination when not a distinct operation.

Search Classes—

- 49—GLASS, subclasses 3, Combined machines, Sheet and plate making; 17, Drawing, and 86, Processes, Molding, Wire-glass.
18—PLASTICS, subclass 57, Processes, Molding, Film-spreading.

88. PROCESSES, HEAT-DEVELOPED COLORING. Processes limited to coloring or changing the color of glass entirely by heat treatment. May include annealing when not a distinct operation.

89. PROCESSES, ANNEALING. Processes of annealing and "tempering" glass. Those that consist of molding and annealing in the same mold are included in Processes, molding. Does not include flattening or bending.

90. COMPOSITIONS. Miscellaneous compositions for making glass under the general definition, processes of making the compositions, and processes of making glass which consist merely in the use of these compositions. Includes compositions used for both enamel and glass.

Search Classes—

- 49—GLASS, subclass 91, Compositions, Enamel.
106—PLASTIC COMPOSITIONS, subclass 11, Fire-hardened.

91. COMPOSITIONS, ENAMEL. Compositions for making vitreous enamels for metal, ceramics, glass, and other materials under the general definition, processes of combining the ingredients to make the compositions, and processes of making enamels which consist merely in the use of these compositions.

Search Class—

- 49—GLASS, subclass 90, Compositions.

92. STRUCTURE. Improvements in glass in which the entire invention lies in the structure or characteristics of the glass itself independent of those of the particular article in which it may happen to be embodied. Includes improvements in wire-glass under the same restrictions. Patents having as an element of the combination any part or element peculiar to the article itself, instead of the glass, are classified in the proper article classes.

Search Classes—

- 88—OPTICS, subclasses 54, Eyeglasses and spectacles, Lenses; 57, Lenses; 57.5, Building-lights and subclasses thereunder.

CLASS 50.—FLUID-PRESSURE REGULATORS.

DEFINITIONS.

Class.

This class includes devices which regulate the pressure of a fluid or which regulate the pressure and cut off the flow of a fluid by the pressure of the fluid itself. Examples of devices which regulate the flow of a fluid by the pressure of another fluid will be found in classes 103, PUMPS, subclass 87, Regulators, Pressure, and appropriate subclasses thereunder; 110, FURNACES, subclass 54, Furnace structure, Feeding air and steam, Boiler-controlled; 121, STEAM-ENGINES, subclass 114, Speed-governors, Pressure; 122, LIQUID HEATERS AND VAPORIZERS, subclasses 447, Regulation, fuel and water, Fluid fuel, Cut-off, and 448, Regulation, Fuel and water, Automatic control, Fluid fuel; 126, STOVES AND FURNACES, subclass 351, Water heaters, Liquid or gaseous fuel, Automatic; 158, LIQUID AND GASEOUS FUEL BURNERS, subclasses 36, Burners, Liquid fuel, Fuel-feeding, and 121, Valves and cleaners, Pressure-governed; 236, DAMPERS, AUTOMATIC, subclasses 6, Fluid pressure, and 8, Pressure, Motor.

Subclasses.

1. COMBINED REGULATORS AND CUT-OFFS. Includes devices for automatically regulating the pressure of a fluid passing through a valve and for automatically closing and maintaining closed the said valve when the pressure of the fluid falls below or exceeds a predetermined point. The valve is actuated to reduce the pressure of the fluid passing therethrough either by the inlet-pressure, the outlet-pressure, or the difference between the inlet and outlet pressures.

Search Class—

- 67—ILLUMINATING BURNERS, subclass 115, Gaseous fuel burners, Automatic cut-offs, Pressure.

2. COMBINED REGULATORS AND CUT-OFFS, VALVE-BALANCING. Means connected to but not forming a portion of the valve itself, for preventing the movement of the valve by sudden fluctuations of pressure in the fluid-supply. Not to be confounded with balanced valves.

3. COMBINED REGULATORS AND CUT-OFFS, LIQUID-TRANSFER. The pressure of the fluid is exerted upon the surface of a liquid free to move in such manner that fluctuations in the pressure of the fluid will transfer the liquid from one receptacle to another or from one portion of a receptacle to another portion thereof, and thereby operate the regulating-valve.

4. COMBINED REGULATORS AND CUT-OFFS, DIAPHRAGM. The regulating-valve is operated by a diaphragm connected thereto and exposed to the pressure of the fluid.

5. COMBINED REGULATORS AND CUT-OFFS, DIAPHRAGM, LEVER. A lever or its equivalent is employed to transmit motion from the diaphragm to the regulating-valve.

6. COMBINED REGULATORS AND CUT-OFFS, FLOAT. The regulating-valve is operated by a float or bell connected thereto and exposed to the pressure of the fluid.

7. COMBINED REGULATORS AND CUT-OFFS, FLOAT, LEVER. A lever or its equivalent is employed to transmit motion from the float or bell to the regulating-valve.

8. COMBINED REGULATORS AND CUT-OFFS, PISTON. The regulating-valve is operated by a piston formed with or connected thereto and exposed to the pressure of the fluid.

9. COMBINED REGULATORS AND CUT-OFFS, PISTON, LEVER. A lever or its equivalent is employed to transmit motion from the piston to the regulating-valve.

10. MULTIPLE REGULATING DEVICES. Regulators in which the regulation is accomplished by more than one regulating device, as by a plurality of operating devices connected to a single valve mechanism, or by a plurality of valve mechanisms connected to a single operating device, or by a plurality of valve mechanisms and operating devices.

Search Classes—

- 48—GAS, HEATING AND ILLUMINATING, subclass 180, Mixers, and the subclasses thereunder.

- 121—STEAM-ENGINES, subclass 114, Speed-governors, Pressure.

11. MULTIPLE REGULATING DEVICES, AUXILIARY VALVE. The regulating-valve is normally held open by the pressure of the fluid, but is closed by the automatic action of a fluid-operated auxiliary valve when the pressure becomes excessive.

Search Classes—

- 103—PUMPS, subclass 87, Regulators, Pressure, and appropriate subclasses thereunder.

- 121—STEAM-ENGINES, subclass 114, Speed-governors, Pressure.

CLASS 50—Continued.

12. MULTIPLE REGULATING DEVICES, AUXILIARY VALVE, VENTING. The regulating-valve is normally held open by the pressure of the fluid on a piston or other similar actuating device connected thereto. When the fluid-pressure becomes excessive, the auxiliary valve cuts off the pressure to the actuating device and the pressure side of said device is vented to permit movement thereof in a direction to close the regulating-valve.

13. REGULATORS, BALANCED-PRESSURE. Devices for automatically regulating the flow of a fluid through a valve by differences in pressure between the inlet and outlet sides of the valve or its actuating device. The flow of fluid is controlled by the movement of the valve to reduce the flow therethrough as the difference between the inlet and outlet pressures increases and to increase the flow therethrough as the difference between the inlet and outlet pressures decreases. These devices resemble closely in structure and arrangement of parts the devices in Regulators, inlet-pressure, but are distinguished from the latter in that they require the presence of an increasing resistance to oppose the closing movement of the valve and of a material space or chamber on the outlet side of the valve or its actuating means, whereby the latter may be readily affected by variations in the pressure on the outlet side thereof.

14. REGULATORS, INLET-PRESSURE. Devices for automatically regulating the flow of fluid to apparatus, the consumption of which is constant, to prevent fluctuations in pressure on the inlet side of the valve from affecting the pressure on the outlet side thereof. The pressure of the fluid on the inlet side of the valve operates the valve to reduce the flow of fluid therethrough as the inlet-pressure increases and to increase the flow of fluid therethrough as the inlet-pressure decreases.

Search Classes—

- 50—FLUID-PRESSURE REGULATORS, subclass 13, Regulators, Balanced-pressure.

- 67—ILLUMINATING BURNERS, subclasses 115, Gaseous fuel burners, Automatic cut-offs, Pressure; 118, Gaseous fuel burners, Regulating, and subclasses thereunder.

15. REGULATORS, OUTLET-PRESSURE. Includes devices for automatically regulating the pressure of fluid in apparatus the consumption of which is variable. The regulating-valve is controlled by the pressure of the fluid on the outlet side thereof, being operated to reduce the flow of fluid therethrough as the pressure increases and to increase the flow of fluid therethrough as the pressure decreases.

Search Class—

- 50—FLUID-PRESSURE REGULATORS, subclass 1, Combined regulators and cut-offs.

16. REGULATORS, OUTLET-PRESSURE, VARYING-RESISTANCE. In addition to regulating the outlet-pressure in the usual manner these devices are provided with means for automatically varying the resistance to the closing of the valve, whereby an increased flow of fluid through the valve is obtained at times when such flow is desired without operating the valve to close the same. Used generally in gas-supply systems to allow the regulator to be employed either with the light day pressure or the heavier night pressure.

17. REGULATORS, OUTLET-PRESSURE, VARYING-RESISTANCE, AUTOMATIC WEIGHT-VARYING. The movement of the operating device to close the regulating-valve is resisted by a weight which is automatically varied in accordance with the pressure of the fluid.

18. REGULATORS, OUTLET-PRESSURE, VARYING-RESISTANCE, CLOCKWORK. The closing of the regulating-valve at times when an increased flow of fluid is desired is resisted by means of clockwork mechanism.

19. REGULATORS, OUTLET-PRESSURE, VARYING-RESISTANCE, LIQUID-TRANSFER. The transfer of a liquid from one receptacle to another or from one portion of a receptacle to another portion thereof resists the closing movement of the regulating-valve at the times when an increased flow of the fluid is desired.

Search Class—

- 50—FLUID-PRESSURE REGULATORS, subclass 3, Combined regulators and cut-offs, Liquid-transfer.

20. REGULATORS, OUTLET-PRESSURE, VALVE-BALANCING. Means are provided connected to but not forming a portion of the valve itself for preventing movement of the valve by sudden fluctuations of pressure in the fluid-supply. Not to be confounded with balanced valves.

Search Class—

- 50—FLUID-PRESSURE REGULATORS, subclass 2, Combined regulators and cut-offs, Valve-balancing; subclass 10, Multiple regulating devices in which will be found devices similar to those existing in this class connected to the valve, but sufficiently larger than the valve to constitute an operating device therefor.

CLASS 50—Continued.

21. **REGULATORS, OUTLET-PRESSURE, DIAPHRAGM.** The regulating-valve is operated by a diaphragm directly connected thereto and exposed to the pressure of the fluid

Search Classes—

- 50—FLUID-PRESSURE REGULATORS, subclass 4, Combined regulators and cut-offs, Diaphragm.
 48—GAS HEATING AND ILLUMINATING, subclasses 2, Acetylene, Generator and holder; 145, Carbureters, Regulating; and 184, Mixers, Diaphragm.
 67—ILLUMINATING BURNERS, subclasses 17, Igniting devices, Gaseous, Pilot, Pressure-operated, Multiple fluid; 18, Igniting devices, Gaseous, Pilot, Pressure-operated, Single fluid; 115, Gaseous fuel burners, Automatic cut-offs, Pressure; and 119, Gaseous fuel burners, Regulating, Automatic.
 73—MEASURING INSTRUMENTS, subclass 1, Meters, Air and gas.
 103—PUMPS, subclass 87, Regulators, Pressure, and appropriate subclasses thereunder.
 121—STEAM-ENGINES, subclass 114, Speed-governors, Pressure.
 137—WATER DISTRIBUTION, subclasses 4, Cocks and faucets, Reciprocating valves; 69, Mains and pipes, Valves, and 93, Cocks and faucets, Water-closet valves, for combinations of diaphragms and valves with connections.
 188—RAILWAY-BRAKES, the following subclasses under the subtitle Fluid-Pressure: 1, Automatic; 12, Pressure-retainers; and 15, Triple-valves.
 236—DAMPERS, AUTOMATIC, subclasses 6, Fluid-pressure; and 8, Pressure-motor.

22. **REGULATORS, OUTLET-PRESSURE, DIAPHRAGM, WATER-PROTECTED.** The diaphragm is protected from injury by the fluid by means of water interposed between said diaphragm and fluid. Used generally where the fluid to be controlled is steam.

23. **REGULATORS, OUTLET-PRESSURE, DIAPHRAGM, SPRING.** The movement of the diaphragm to close the regulating-valve is resisted by a spring.

Search Classes—

- 50—FLUID-PRESSURE REGULATORS, subclasses 11, Multiple regulating devices, Auxiliary valve, and 12, Multiple regulating devices, Auxiliary valve, Venting.
 48—GAS, HEATING AND ILLUMINATING, subclass 2, Acetylene, generator and holder.
 137—WATER DISTRIBUTION, subclass 93, Cocks and faucets, Water-closet valves, for combinations of valves, diaphragms, and springs.
 188—RAILWAY-BRAKES, the following subclasses under the subtitle Fluid-pressure: 1, Automatic; 12, Pressure-retainers; and 15, Triple valves.
 236—DAMPERS, AUTOMATIC, subclasses 6, Fluid-pressure, and 8, Pressure-motor.

24. **REGULATORS, OUTLET-PRESSURE, DIAPHRAGM, WEIGHT.** The movement of the diaphragm to close the regulating-valve is resisted by a weight either applied directly to the diaphragm or indirectly thereto, as by a lever.

Search Class—

- 50—FLUID-PRESSURE REGULATORS, subclass 22, Regulators, Outlet-pressure, Diaphragm, Water-protected.

25. **REGULATORS, OUTLET-PRESSURE, DIAPHRAGM, LEVER.** The diaphragm which actuates the regulating-valve is connected thereto by a lever or its equivalent.

Search Classes—

- 50—FLUID-PRESSURE REGULATORS, subclass 5, Combined regulators and cut-off, Diaphragm, Lever.
 48—GAS, HEATING AND ILLUMINATING, subclass 145, Carbureters, Regulating.
 73—MEASURING INSTRUMENTS, subclass 1, Meters, Air and gas.
 236—DAMPERS, AUTOMATIC, subclasses 6, Fluid-pressure; and 8, Pressure-motor.

26. **REGULATORS, OUTLET-PRESSURE, DIAPHRAGM, LEVER, SPRING.** The diaphragm which actuates the regulating-valve is connected thereto by a lever or its equivalent, the movement of the diaphragm to close the regulating-valve being resisted by a spring.

Search Class—

- 50—FLUID-PRESSURE REGULATORS, subclass 23, Regulators, Outlet-pressure, Diaphragm, Spring, for analogous devices comprising a diaphragm, valve, and spring, but omitting a lever connection.

27. **REGULATORS, OUTLET-PRESSURE, DIAPHRAGM, LEVER, WEIGHT.** The diaphragm which actuates the regulating-valve is connected thereto by a lever or its equivalent, the movement of the diaphragm to close the regulating-valve being resisted by a weight either applied directly to the diaphragm or indirectly thereto, as by a lever.

Search Class—

- 50—FLUID-PRESSURE REGULATORS, subclass 24, Regulators, Outlet-pressure, Diaphragm, Weight, for analogous devices comprising a diaphragm, valve, and weight, but omitting a lever connection.

28. **REGULATORS, OUTLET-PRESSURE, FLOAT.** The regulating-valve is operated by a float or bell directly connected thereto and exposed to the pressure of the fluid.

Note.—Not to be confounded with gasometer-bells, which merely cut off the flow of a fluid to a reservoir when the latter is filled to a certain limit, examples of which may be found in class 48, GAS, HEATING AND ILLUMINATING, subclass 5, Acetylene, Generators, Water-feed, Holder-operated, and the subclasses thereunder.

CLASS 50—Continued.

Search Classes—

- 50—FLUID-PRESSURE REGULATORS, subclass 6, Combined regulators and cut-offs, Float.
 48—GAS, HEATING AND ILLUMINATING, subclass 2, Acetylene, Generator and holder; 38, Acetylene, Generators, Carbide-feed, and the subclasses thereunder; 145, Carbureters, Regulating; and 184, Mixers, Diaphragm.
 67—ILLUMINATING BURNERS, subclasses 17, Igniting Devices, Gaseous, Pilot, Pressure-operated, Multiple fluid; 18, Igniting devices, Gaseous, Pilot, Pressure-operated, single fluid; and 115, Gaseous fuel burners, Automatic cut-offs, Pressure.
 73—MEASURING INSTRUMENTS, subclass 1, Meters, Air and gas.
 121—STEAM ENGINES, subclass 20, Traps.
 137—WATER DISTRIBUTION, subclasses 68, Tanks, Automatic, 101, Feeders, 102, Indicators, 103, Traps.
 158—LIQUID AND GASEOUS FUEL BURNERS, subclass 38, Burners, Liquid-fuel, Fuel-feeding, Maintained oil-level, Float-controlled.

29. **REGULATORS, OUTLET-PRESSURE, FLOAT, SPRING.** The movement of the float to close the regulating-valve is resisted by a spring.

30. **REGULATORS, OUTLET-PRESSURE, FLOAT, WEIGHT.** The movement of the float to close the regulating-valve is resisted by a weight either applied directly to the float or indirectly thereto, as by a lever.

Search Classes—

- 50—FLUID-PRESSURE REGULATORS, subclasses 17, Regulators, Outlet-pressure, Varying-resistance, Automatic weight-varying; 19, Regulators, Outlet-pressure, Varying-resistance, Liquid-transfer.
 237—HEAT DISTRIBUTING SYSTEMS, subclass 24, Traps, and the subclasses thereunder.

31. **REGULATORS, OUTLET-PRESSURE, FLOAT, LEVER.** The float which actuates the regulating-valve is connected thereto by a lever or its equivalent.

Search Classes—

- 50—FLUID-PRESSURE REGULATORS, subclass 7, Combined regulators and cut-offs, Float, Lever.
 48—GAS, HEATING AND ILLUMINATING, subclasses 181, Mixers, Bell and tank; 182, Mixers, Bell and tank, Anterior, and 183, Mixers, Bell and tank, posterior, for combinations of floats and valves with lever connections.
 137—WATER DISTRIBUTION, subclasses 101, Feeders; 102, Indicators; and 103, Traps.
 182—SEWERAGE, subclass 4, Flushing.
 237—HEAT DISTRIBUTING SYSTEMS, subclass 24, Traps, and the subclasses thereunder.

32. **REGULATORS, OUTLET-PRESSURE, FLOAT, LEVER, SPRING.** The float which actuates the regulating-valve is connected thereto by a lever or its equivalent, the movement of the float to close the valve being resisted by a spring.

Search Class—

- 50—FLUID-PRESSURE REGULATORS, subclass 29, Regulators, Outlet-pressure, Float, Spring, for analogous devices, comprising a float, valve, and spring, but omitting a lever connection.

33. **REGULATORS, OUTLET-PRESSURE, FLOAT, LEVER, WEIGHT.** The float which actuates the regulating-valve is connected thereto by a lever or its equivalent, the movement of the float to close the valve being resisted by a weight either applied directly to the float or indirectly thereto, as by a lever.

Search Class—

- 50—FLUID-PRESSURE REGULATORS, subclass 30, Regulators, Outlet-pressure, Float, Weight, for analogous devices comprising a float, valve, and weight, but omitting a lever connection.

34. **REGULATORS, OUTLET-PRESSURE, PISTON.** The regulating-valve is operated by a piston directly connected thereto and exposed to the pressure of the fluid.

Search Classes—

- 50—Fluid-pressure regulators, subclasses 8, Combined regulators and cut-offs, Piston; 11, Multiple regulating devices, Auxiliary valve, and 12, Multiple regulating devices, Auxiliary valve, Venting.
 103—PUMPS, subclass 87, Regulators, Pressure, and appropriate subclasses thereunder.
 121—STEAM-ENGINES, subclass 114, Speed-governors, Pressure.
 137—WATER DISTRIBUTION, subclasses 4, Cocks and faucets, Reciprocating valves; 53, Safety-valves; 69, Mains and pipes, Valves.
 138—HYDRAULIC MOTORS, subclass 14, For elevators, Valves.
 158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 36, Burners, Liquid-fuel, Fuel-feeding; and 121, Valves and cleaners, Pressure-governed.
 169—FIRE-EXTINGUISHERS, subclass 23, Stationary systems, Automatic valve, Pressure-controlled.
 188—RAILWAY-BRAKES, the following subclasses under the subtitle Fluid-pressure: 1, Automatic; 7, Engineers' valves; 10, Brake-release valves; 12, Pressure-retainers; and 15, Triple valves.
 236—Dampers, Automatic, subclasses 6, Fluid-pressure; and Pressure-motor.

35. **REGULATORS, OUTLET-PRESSURE, PISTON, SPRING.** The movement of the piston to close the regulating-valve is resisted by a spring.

CLASS 50—Continued.

Search Classes—

- 50—FLUID-PRESSURE REGULATORS, subclasses 11, Multiple regulating devices, Auxiliary valve, and 12, Multiple regulating devices, Auxiliary valve, Venting.
- 186—RAILWAY-BRAKES, Fluid-pressure, subclasses 1, Automatic; 7, Engineers' valves; 10, Brake-release valves; 12, Pressure-retainers, and 15, Triple valves.
- 137—WATER DISTRIBUTION, subclass 53, Safety-valves; subclass 93, Cocks and faucets, Water-closet valves, for combinations of pistons, springs, and valves.
36. REGULATORS, OUTLET-PRESSURE, PISTON, WEIGHT. The movement of the piston to close the regulating-valve is resisted by a weight either applied directly to the piston or indirectly thereto, as by a lever.
37. REGULATORS, OUTLET-PRESSURE, PISTON, LEVER. The piston which actuates the regulating-valve is connected thereto by a lever or its equivalent.
- Search Classes—**
- 50—FLUID-PRESSURE REGULATORS, subclass 9, Combined regulators and cut-offs, Piston, Lever.
- 103—PUMPS, subclass 87, Regulators, Pressure, and appropriate subclasses thereunder.
- 121—STEAM-ENGINES, subclass 114, Speed-governors, Pressure.
- 137—WATER DISTRIBUTION, subclass 53, Safety-valves, for combinations of pistons, levers, and valves.

CLASS 50—Continued.

- 158—LIQUID AND GASEOUS FUEL BURNERS, subclasses, 36, Burners, Liquid-fuel, Fuel-feeding, and 121, Valves and cleaners, Pressure-governed.
- 236—DAMPERS, AUTOMATIC, subclasses 6, Fluid-pressure, and 8, Pressure-motor.
38. REGULATORS, OUTLET-PRESSURE, PISTON, LEVER, SPRING. The piston which actuates the regulating-valve is connected thereto by a lever or its equivalent, the movement of the piston to close the valve being resisted by a spring.
- Search Classes—**
- 50—FLUID-PRESSURE REGULATORS, subclass 35, Regulators, Outlet-pressure, Piston, Spring, for analogous devices comprising a piston, valve, and spring, but omitting a lever connection.
- 137—WATER DISTRIBUTION, subclass 53, Safety-valves, for combinations of pistons, levers, valves, and resisting-springs.
39. REGULATORS, OUTLET-PRESSURE, PISTON, LEVER, WEIGHT. The piston which actuates the regulating-valve is connected thereto by a lever or its equivalent, the movement of the piston to close the valve being resisted by a weight either applied directly to the piston or indirectly thereto, as by a lever.
- Search Class—**
- 50—FLUID-PRESSURE REGULATORS, subclass 36, Regulators, Outlet pressure, Piston, Weight, for analogous devices comprising a piston, valve, and weight, but omitting a lever connection.

CLASS 54.—HARNESS.

DEFINITIONS.

Class.

This class includes, besides the usual harness for attaching animals to vehicles, such harness arrangements or devices as are used for breaking or training animals, preventing their kicking; also, horse-boots, riding-saddles, spurs, ox-yokes, fly-nets, and such bonnets and protectors or shields for protecting the animal from sun, rain, etc., as are adapted to be attached to the animal or the harness; also, blanket-fasteners when not useful in other relations; also, all pad, collar, and hame fasteners, halter, hame, and trace, trace and whiffletree couplings, and trace-carriers.

Patents relating solely to harness buckles, hooks, clips, clamps, clasps, couplings, or fastenings of a general nature are in class 24, BUCKLES, BUTTONS, CLASPS, etc.

Subclasses.

1. MISCELLANEOUS. Harness structures and parts not classifiable in any of the other subclasses.
2. TRACK. Harness especially adapted to race-track purposes. Usually the collar and hames or the breast-collar is omitted and the thills are attached to the back-band or harness-saddles.
3. YOKE. Double harness in which there is a cross piece or pieces extending from one animal to the other and the draft connection is made between the animals to this cross-piece, much as the connection to an ox-yoke is made, the ordinary traces being omitted.
4. BACK-BANDS. Special forms of back-bands.
Search Class—
54—HARNESS, subclass 38, Saddles, Harness.
5. BREECING. Harness in which the novelty lies in the breeching-straps or their relative arrangements.
Note.—Holdback-hooks and other fastening devices especially adapted to secure the holdback-straps to the thills are in class 21, CARRIAGES AND WAGONS, Holdbacks, while hooks and buckles of a general nature are to be found in class 24, BUCKLES, BUTTONS, CLASPS, etc.
Search Class—
248—SUPPORTS, under the appropriate subclasses of "Hooks," for simple supporting hooks.
6. BRIDLES. Such inventions as relate to the headstall or its connections to the bit.
Search Class—
54—HARNESS, subclass 24, Halters.
7. BRIDLES, BITS. Inventions relating solely to the bridle-bit.
8. BRIDLES, BITS, MOUTHPIECES. Inventions relating solely to the part of the bit which is to be placed in the animal's mouth or relating to the attachment of the mouthpiece to the end rings or cheek-pieces.
9. BRIDLES, BITS, MOUTHPIECES, DOUBLE. Inventions relating to those bits characterized by two connected mouthpieces so arranged as to be separated laterally or slid in opposite directions by the pull on the reins; also, those patents in which the check-bit is attached to the driving-bit.
10. BRIDLES, BLINDS. Blinds and their attachment to the bridle.
Note.—Blindfolding devices to be used in case of fire and such blinds as are used to prevent animals in pasture from jumping fences, fighting, etc., are in class 119, ANIMAL HUSBANDRY, subclass 104, Restraining devices, Blinders.
11. BRIDLES, BLINDS, COVERING AND UNCOVERING. Inventions which relate to such blinds as, by means of a cord or other connection operated by the driver, can be quickly brought entirely over the animal's eyes to blindfold him. Usually employed when the animal takes fright.
Search Class—
54—HARNESS, subclass 15, Bridles, Stranglers.
12. BRIDLES, BROW-BANDS. Inventions relating to the brow-band of the bridle.
13. BRIDLES, CROWN-LOOPS. The loops or guides on top of the bridle for guiding the overdraw-checkrein.
14. BRIDLES, GAG-RUNNERS. The runners or guides attached to the sides of the bridle and through which the side checkrein is made to pass.
15. BRIDLES, STRANGLERS. Devices to be operated by the driver, either through the driving-reins, a separate line, or other connection, adapted to interfere with the breathing of the animal, either by choking or by compressing or covering the nostrils, usually to stop runaway or vicious horses.
Search Class—
54—HARNESS, subclass 11, Bridles, Blinds, Covering and uncovering.

CLASS 54—Continued.

16. CHECKREINS. Reins for holding up the animal's head.
17. CHECKREINS, HOOK-LOOPS. Retaining-loops or devices for connecting and holding the checkrein on the check-loop. Some rein-spreading bars are here included.
18. COMBINED COLLAR AND HAMES. Structures in which the collar and hames are permanently attached together or in which these parts are merged into one structure, to the disappearance of a separate collar or hames, the traces being directly secured to the single structure.
Search Class—
54—HARNESS, subclasses 21, Collars, Fasteners, and 26, Hames, Fasteners, for features of fastening devices.
19. COLLARS. Inventions relating to the structure of a horse collar.
Search Class—
54—HARNESS, subclasses 65, Pads, and 67, Pads, Neck.
20. COLLARS, BREAST. The collar portion of what is commonly known as "breast-harness."
21. COLLARS, FASTENERS. Means for fastening the collar ends together.
Search Class—
54—HARNESS, subclasses 26, Hames, Fasteners, and 68, Pads, Fasteners.
22. CRUPPERS. Inventions relating to the harness-crupper.
23. GIRTHS. Inventions in which the novelty lies in the saddle or harness girth or surcingle.
24. HALTERS. Novel forms of halters.
Search Classes—
54—HARNESS, subclasses 6, Bridles, and 15, Halters, Connectors.
24—BUCKLES, BUTTONS, CLASPS, etc., for clamps or coupling devices for rope halters.
25. HAMES. Inventions in which the novelty resides in the hame structure.
Search Class—
54—HARNESS, subclass 18, Combined collar and hames.
26. HAMES, FASTENERS. Devices for fastening the hames together when in position on the collar and on the animal.
Search Class—
54—HARNESS, subclasses 18, Combined collar and hames, and 21, Collars, Fasteners.
27. HAMES, FASTENERS, LEVER. Fastening devices involving a lever action in their operation.
28. HAMES, FASTENERS, STRAP. Such devices as comprise a strap-fastening, usually with a specially adapted buckle.
29. HAMES, FASTENERS, TOP. Devices for fastening the top or upper ends of the hames.
30. HAME AND TRACE CONNECTORS. Devices or couplings for connecting together the hames and the tugs or traces.
Search Class—
24—BUCKLES, BUTTONS, CLASPS, etc.
31. HAME AND TRACE CONNECTORS, ADJUSTABLE. Such connections as are capable of an adjustment so as to bring the point of connection higher or lower upon the hames.
32. HAME-TUGS. That part of the harness sometimes considered the forward part of the trace, but which connects the trace proper with the hame.
33. HAME-TUGS, ADJUSTABLE. Tugs adapted to be adjusted in length.
34. HITCHING-STRAPS. Various devices for hitching animals, straps or ropes to be attached to bridle-bits or halters or passed about the animal's neck or nose, devices for engaging posts or similar stationary objects; also, arrangements for converting the driving-rein into a hitching-strap.
Search Class—
119—ANIMAL HUSBANDRY, subclass 109, Restraining, Hitching devices, and subclasses thereunder for such devices as are stationary and not adapted to be carried with the animal; also, such arrangements as are for tethering animals for grazing purposes.
35. MARTINGALES. Devices adapted to be attached to the animal's head and also to the girth to serve as a means for properly holding the animal's head.
36. REINS. The structure or arrangement of the driving-reins.
37. SADDLES. Saddles not classifiable in any of the other subclasses. Pack-saddles are here included.

CLASS 54—Continued.

38. **SADDLES, HARNESS.** Harness-saddles.
39. **SADDLES, HARNESS, CART.** Saddles especially designed for cart-harness. Usually the thill-tug strap is free to slide or a pivoted cross-bar carries a thill-tug strap at each end.
40. **SADDLES, HARNESS, PIVOTED SIDE PLATES.** Saddles characterized by having the side or "jockey" plates pivoted either to each other or to a central intermediate pivot in order to adapt the saddle to different animals. Some of these pivots are adapted to be clamped at any desired adjustment, while others are free to permit the plates to move.
41. **SADDLES, HARNESS, CUSHIONS.** Saddle cushions or pads when especially constructed to be attached to and become part of the saddle.
Note.—Pads of more general utility are to be found in this class in subclass 66, Pads, Back.
42. **SADDLES, HARNESS, SEAT AND TREE CONNECTORS.** Means for connecting together the seat and saddletree proper. Usually the check or water hook fastening is involved in the connection.
43. **SADDLES, HARNESS, TUG-BEARERS.** Fastenings or guides for the thill-tug straps.
44. **SADDLES, RIDING.** Riding-saddles.
Search Class—
54—HARNESS, subclass 66, Pads, Back, for the features of pads for riding-saddles.
45. **SADDLES, RIDING, SIDE.** Sidesaddles for women riders.
46. **SADDLES, RIDING, ATTACHMENTS.** Stirrup-straps, sweat-leathers, covers, girth or stirrup connectors, or other attached saddle parts.
47. **STIRRUPS.** Riding-stirrups and their housings or fenders.
48. **STIRRUPS, ELASTIC.** Stirrups so constructed as to yield under the rider's weight to reduce the jar of the animal's motions.
Search Class—
54—HARNESS, subclass 86, Elastic connections, for elastic couplings adapted to form part of the stirrup-strap or support for a rigid stirrup.
49. **STIRRUPS, SAFETY.** Stirrups constructed with a view to preventing the rider's foot "hanging" or catching after dismounting or in case the rider is thrown.
50. **THILL-TUGS.** The tug, lug, or loop attached to the harness-saddle and through which the shaft or thill is passed to be supported.
Search Class—
54—HARNESS, subclass 54, Trace-carriers.
51. **THILL-TUGS, OPEN.** Tugs adapted to be opened laterally so the thill can be put in from the side without the necessity of inserting it into the tug end first.
52. **TRACES.** Novel trace structure.
Search Classes—
54—HARNESS, subclass 32, Hame-tugs for the forward portion of the tug or trace which extends from the hame to the back-band; subclass 30, Hame and trace connectors for the connecting devices between the hame and trace or tug; subclass 53, Traces, whiffletree-connectors for the connections to the whiffletree.
24—BUCKLES, BUTTONS, CLASPS, etc., for trace or tug buckles.
53. **TRACES, WHIFFLETREE-CONNECTORS.** Devices including the usual cockeyes for attaching the traces to the whiffletrees.
Search Class—
21—CARRIAGES AND WAGONS, Whiffletree-hooks, for such whiffletree-hooks and trace-coupling devices as do not involve any modification of the trace part.
54. **TRACE-CARRIERS.** Devices adapted to guide, hold, or support the trace at some point between the hame and singletree, usually opposite the back-band or harness-saddle.
Search Class—
54—HARNESS, subclass 50, Thill-tugs.
55. **TRACE-CARRIERS, HOOK.** Such carriers as are adapted to hook into or around the trace (usually a chain trace) to support it.
Search Class—
54—HARNESS, subclasses 56, Trace-end supporters, and 62, Check-hooks, Movable-keeper.
56. **TRACE-END SUPPORTERS.** Hooks, clips, or other devices to which the free ends of the traces are attached after being unhitched from the whiffletree.
Search Class—
54—HARNESS, subclasses 55, Trace-carriers, Hook, and 62, Check-hooks, Movable-keeper.
57. **UNDERCHECKS.** Devices attached below the animal's head to hold it up and in proper position. Usually the device is a rigid bar and acts to push up the head of the animal.
58. **BREAST-STRAPS.** Straps or chains which are attached to the hames and to the neck-yoke or wagon-tongue to hold up the latter.

CLASS 54—Continued.

59. **BREAST-STRAPS, SHIELDS AND CONNECTORS.** Various slides, shields, or other arrangements for protecting the strap from the wear of the neck-yoke; also, other connecting devices between the strap and neck-yoke.
60. **ABOLISHED.**
61. **CHECK-HOOKS.** Hooks, usually attached to the harness-saddles or back-bands for holding the checkreins.
Search Class—
54—HARNESS, subclass 70, Checking and unchecking devices, subclass 42, Saddles, Harness, Seat and tree connectors, for the means for securing the hook to the saddle.
62. **CHECK-HOOKS, MOVABLE-KEEPER.** Checkrein-hooks which have a movable part to keep the rein in the hook.
Search Class—
54—HARNESS, subclasses 70, Checking and unchecking devices, 56, Trace-end supporters, and 55, Trace-carriers, Hook.
63. **TERRETS.** Guides or rings usually attached to the back-band, harness-saddle, collar, or hames to guide the driving-reins.
Search Class—
54—HARNESS, subclasses 38, Saddles, Harness, and 25, Hames, for means for attaching the terret to its support.
64. **HITCHING-STRAP HOLDERS.** Devices, usually clips, clasps, or clamps, attached to some convenient part of the harness for holding the free end of the hitching-strap when the latter is not in use.
65. **PADS.** Various cushioning-pads for harness.
66. **PADS, BACK.** Pads especially designed to be placed upon the animal's back, as harness and riding-saddle pads.
Search Class—
54—HARNESS, subclasses 41, Saddles, Harness, Cushions, and 44, Saddles, Riding, for such pads as are adapted to be permanently attached to and become part of the harness or riding-saddle.
67. **PADS, NECK.** Neck-pads, usually for collars.
Search Class—
54—HARNESS, subclass 19, Collars.
68. **PADS, FASTENERS.** Devices for fastening the pads to the harness part.
69. **ATTACHING AND DETACHING DEVICES.** Special arrangements of harness and such special vehicle attachments as are to cooperate therewith for quickly connecting and disconnecting the animal and vehicle. Usually the driver can operate the disconnecting devices without leaving the vehicle. Usually the connection is made to the thills opposite the back-band or thill-loops, no singletree being used.
Search Class—
21, CARRIAGES AND WAGONS, subclass 75, Horse-detachers, for such attaching and detaching devices as involve no harness modification other than the usual trace-eye connection, which is usually between the tugs or traces and the singletree ends.
70. **CHECKING AND UNCHECKING DEVICES.** Devices for this purpose which are adapted to be operated by the driver while remaining in the vehicle.
Search Class—
54—HARNESS, subclasses 61, Check-hooks; 62, Check-hooks, Movable-keeper, and 56, Trace-end supporters for check-hook structures.
71. **BREAKING AND TRAINING DEVICES.** Various harness arrangements for controlling vicious or unruly animals or training animals to trot, pace, etc. Kicking-straps, devices for throwing animals, stopping them from running away, increasing leg or knee action, etc., are here included.
Note.—Tethering-hopples are found in class 119, ANIMAL HUSBANDRY, subclass 126, Restraining devices, Hopples.
72. **BREAKING AND TRAINING DEVICES, LEG-SPREADERS.** Devices for pulling or causing the animal to throw the legs farther apart in traveling to prevent interference.
Note.—Such devices as are in the nature of so-called "horse-boots" will be found in this class in subclass 82, Horse-boots.
73. **REIN-GUARDS.** Various devices, other than terrets, carried by the harness for guiding or guarding the reins to prevent them catching on the harness or under the animal's tail.
Note.—Devices for holding the animal's tail to prevent it being switched about or over the reins are in this class in subclass 78, Tail-holders.
74. **REIN-HOLDS.** Various hand-loops, buttons, clasps, or other devices designed to enable the driver to get a firmer or better grip or pull on the reins.
75. **TRIMMINGS, COVERED.** Various covered harness-trimmings, such as buckles, rings, check-hooks, terrets, etc.
76. **TRIMMINGS, ORNAMENTAL.** The various ornamental harness attachments, such as rosettes, plumes, tassels, etc.
77. **OX-YOKES.** Yokes for oxen.

CLASS 54—Continued.

78. **TAIL-HOLDERS.** Devices for holding the animal's tail for various purposes, such as to keep it out of the mud, prevent it being switched about or over the reins, to cause it to hang in proper curve, or to take out undesirable curves or shapes.
Note.—Devices for holding a cow's tail while she is being milked are found in class 119, **ANIMAL HUSBANDRY**, subclass 165, **Restraining devices**, **Cow tail-holders**, and subclasses thereunder.
79. **BLANKETS.** Horse-blankets, ways of fitting and securing them, and some novel materials.
Search Class—
2—APPAREL, subclass 80, **Body-garments**, **Lap-robcs**.
80. **BONNETS AND SHIELDS.** Shades, bonnets, shields, and protectors (not blankets or fly-nets) adapted to be attached to the animal or harness to keep off sun, wind, rain, dust, etc.
Note.—Such canopies as are adapted to be carried by the vehicle or its thills or shafts are found in class 135, **TENTS, CANOPIES, UMBRELLAS, AND CANES**, subclass 5, **Canopies**.
81. **FLY-NETS.** Nets for protecting the animal from insects.
82. **HORSE-BOOTS.** Various devices, commonly styled "horse-boots," adapted to be secured to the animal's leg or hoof to secure protection, prevent interfering, hold medicating substances, etc.
Note.—Such devices as in any way engage or pass beneath the hoof to cushion, protect, or hold medicating substances to it are to be found in class 168, **FARRIERY**, **Hoof-pads**.

CLASS 54—Continued.

83. **SPURS.** Riding-spurs.
84. **SUPPORTS.** Devices for suspending or supporting harness, usually so it can be quickly lowered upon the animal, as for fire-engines, police-patrols, hospital-vans, etc.
85. **HALTERS, CONNECTORS.** Limited to the various metallic connecting-pieces employed on strap halters.
Note.—Metallic couplings for rope halters are found in class 24, **BUCKLES, BUTTONS, CLASPS**, etc.
Search Class—
54—HARNESS, subclasses 24, **Halters**, and 34, **Hitching-straps**.
86. **ELASTIC CONNECTIONS.** Elastic connecting pieces in combination with parts of harness, such as reins, checkreins, draft-tugs, stirrup-straps, etc.
Search Class—
74—MACHINE ELEMENTS, subclass 72, **Elastic tension devices**, and the subclasses thereunder for elastic connections *per se*.
87. **LOOPS.** Such loops and rings as are adapted for use on various parts of the harness where two or more straps are to be joined or connected together.

CLASS 58.—HOROLOGY.

DEFINITIONS.

Class.

This class includes instruments employed for measuring time and the parts or details peculiar thereto.

The class does not include machines or implements for making, assembling, testing, or in any manner operating upon the timepiece or any of its parts, these being found in class 81, TOOLS, subclass 3, Special, and the subclasses thereunder; class 29, METAL WORKING, appropriate subclasses; and class 73, MEASURING INSTRUMENTS, or in such other classes as are appropriate to the invention.

Nor does it include certain parts ordinarily employed in connection with the motor mechanism of the timepiece, but which are of general utility, being adapted for use in connection with other motors, these being found in class 185, MOTORS.

Nor does it include inventions whereby certain things are done or machines or devices operated at a predetermined time, these being classified in class 161, TIME-CONTROLLING MECHANISM.

Subclasses.

1. MISCELLANEOUS. Horological devices not elsewhere classifiable.
2. CLOCKS. Clocks not elsewhere classifiable.
3. CLOCKS, ASTRONOMICAL. Clocks for indicating astronomical facts.
Search Class—
58—HOROLOGY, subclass 58, Watches, Calendar.
4. CLOCKS, CALENDAR. Clock mechanisms for automatically indicating the days of the week, days of the month, the years, or any other feature of a calendar.
Search Class—
58—HOROLOGY, subclass 58, Watches, Calendar.
5. CLOCKS, CALENDAR, DIAL. Calendar-clocks having dials for indicating the calendar features.
Search Class—
58—HOROLOGY, subclass 58, Watches, Calendar.
6. CLOCKS, CALENDAR, ROLLER. Calendar-clocks having rollers or drums for indicating the calendar features.
Search Class—
58—HOROLOGY, subclass 58, Watches, Calendar.
7. CLOCKS, TRAINS. The internal movements of clocks.
Search Class—
58—HOROLOGY, subclass 59, Watches, Movements.
8. CLOCKS, TRAINS, STRIKING. Trains of gearing otherwise unclassified whereby the hours or fractions thereof are sounded.
9. CLOCKS, TRAINS, STRIKING, CAM-CONTROLLED. Striking-trains which are tripped by a cam action.
10. CLOCKS, TRAINS, STRIKING, REPEATING. Striking mechanism by which the preceding hour may be repeated at any desired time.
Search Class—
58—HOROLOGY, subclass 60, Watches, Repeaters.
11. CLOCKS, TRAINS, STRIKING, REPEATING, DOUBLE-SNAIL. Repeating mechanism having hour, quarter, or minute snails to repeat the hours and parts thereof.
Search Class—
58—HOROLOGY, subclasses 61, Watches, Repeaters, Double-snail, and 62, Watches, Repeaters, Double-snail, Trains.
12. CLOCKS, TRAINS, STRIKING, MUSICAL. Clock-trains operating at predetermined times on a musical instrument; also, "cuckoo-clocks" and the like.
13. CLOCKS, TRAINS, STRIKING, CHIMES. Striking-trains operating on a series of bells of different tones.
14. CLOCKS, TRAINS, STRIKING, GRAPHOPHONE. Clocks having striking-trains wherein the bell or other alarm is replaced by a graphophone or gramophone record for announcing the hour or any other desired fact.
15. CLOCKS, TRAINS, STRIKING, TURN-BACKS. Devices upon the center arbor which allow the lifting-hooks to be turned back past zero without interfering with the striking mechanism.
16. CLOCKS, TRAINS, ALARM. Clock-trains sounding an alarm at any predetermined time to which the device has been set.
Search Class—
161—TIME-CONTROLLING MECHANISM, subclass 23, Alarms.
17. CLOCKS, TRAINS, ALARM, EIGHT-DAY. Alarm-trains that run for a time longer than a day (generally eight days) and sound an alarm each day at the time to which it has been set.

CLASS 58—Continued.

18. CLOCKS, TRAINS, ALARM, REPEATING. Alarm-clocks so constructed as to repeat the alarm several times with short intervals between.
19. CLOCKS, TRAINS, ALARM, ELECTRIC. Alarm-clocks not otherwise classified wherein the alarm is operated at the desired time by the closing of an electric circuit.
20. CLOCKS, TRAINS, ALARM, ELECTRIC, LET-OFF. Electrically-operated alarm-clocks wherein the circuit is closed by the sudden letting off of some part of the alarm mechanism.
21. CLOCKS, TRAINS, ALARM, ELECTRIC, LET-OFF, ALARM WINDING-ARBOR. Electrically-operated alarm-clocks wherein the alarm is let off by the movement of the winding-arbor when the alarm-train is placed in action.
22. CLOCKS, TRAINS, ALARM, LET-OFF. Trip devices for releasing the alarm-train.
23. CLOCKS, ELECTRIC. Electric-clocks not classifiable elsewhere.
24. CLOCKS, ELECTRIC, SYSTEMS. Systems of electric clocks, including the primary or master clock, the secondary or receiving clocks, and the connections, circuits, etc.
25. CLOCKS, ELECTRIC, PRIMARY. Restricted to the primary or master clock of an electric-clock system, together with its mechanism for operating the circuits to the secondary clocks.
Search Class—
58—HOROLOGY, subclass 24, Clocks, Electric, Systems.
26. CLOCKS, ELECTRIC, SECONDARY. The secondary or receiving clocks of an electric-clock system, together with their immediate operating mechanism when such operating mechanism is not an escapement device.
Search Class—
58—HOROLOGY, subclass 24, Clocks, Electric, Systems.
27. CLOCKS, ELECTRIC, SECONDARY, ESCAPEMENT. Secondary electric clocks wherein the time mechanism is operated by an escapement.
28. CLOCKS, ELECTRIC, BALANCE. Electrically operated or controlled clocks employing a balance instead of a pendulum.
29. CLOCKS, ELECTRIC, PENDULUM. Electrical devices by which power is transmitted to the escape-wheel, the pendulum controlling the circuit receiving its impulse from either the escape-wheel or an electromagnet, but not transmitting any power.
30. CLOCKS, ELECTRIC, PENDULUM, ACTUATED. Clocks wherein the pendulum is electrically controlled and mechanically transmits power to the escape-wheel.
31. CLOCKS, ELECTRIC, PENDULUM, REGULATED. Electric means for controlling the length of the pendulum.
32. CLOCKS, ELECTRIC, PENDULUM, SYNCHRONIZERS. Electric means whereby the pendulums of several clocks are caused to vibrate in unison.
33. CLOCKS, ELECTRIC, CIRCUIT-CONTROLLERS. Electric clocks, including the circuit-breakers, etc., of electric-clock systems.
34. CLOCKS, ELECTRIC, HAND-SETTERS. Electrically-operated devices for automatically setting the hands of clocks to any desired time for which the mechanism has been adjusted.
35. CLOCKS, ELECTRIC, HAND-SETTERS, SYSTEMS. Devices including the general organization and circuits whereby the hands of any number of clocks in different localities are set from a central station.
36. CLOCKS, ELECTRIC, HAND-SETTERS, OPPOSED-LEVER. Electric hand-setting devices wherein at the desired time two levers are moved toward each other and in their movement carry the hands to the time to which the clock is to be set.
37. CLOCKS, ELECTRIC, HAND-SETTERS, SLIDING CONNECTIONS. Electric hand-setting devices wherein the hands before being set are separated from the clock-train by a connection having a longitudinal sliding movement.
38. CLOCKS, ELECTRIC, STRIKING. Clock striking mechanism operated electrically.
39. CLOCKS, ELECTRIC, STRIKING, INTERMITTENT-SIGNAL. Electric means whereby a time-signal is sent at any desired time over a telegraph or telephone line.
40. CLOCKS, ELECTRIC, WINDING. Electric devices located at points distant from the clocks for winding the same.

CLASS 58—Continued.

41. CLOCKS, ELECTRIC, WINDING, SELF. Winding-trains operated electrically, the circuits being automatically closed at regular or desired intervals by the movement of some part of the clock mechanism.
42. CLOCKS, PNEUMATIC. Clocks whose time mechanism is operated by pneumatic pressure.
43. CLOCKS, GEOGRAPHICAL, DISK. Clocks employing disks to indicate the absolute or relative time at various places on the earth.
44. CLOCKS, GEOGRAPHICAL, GLOBE. Clocks employing globes to indicate the absolute or relative time at various places on the earth.
45. CLOCKS, MAGIC. Clocks having the time-train concealed in the hands and having a weight to overbalance the same.
46. CLOCKS, WINDING. Trains of gearing and parts thereof whereby power is transmitted from the winding-key to the mainspring.
- Search Class—**
185—MOTORS, subclass 6, Composite, Weight, Winding, together with the search classes noted thereunder, for mechanism for operating winding drums.
47. CLOCKS, WINDING, MOTORS, PNEUMATIC. Clock-trains that are wound up by means of pneumatic power or by the action of the wind or the like.
- Search Class—**
185—MOTORS, subclass 8, Composite, Weight, Winding, Motor, Fluid, together with the search classes noted thereunder, for spring and weight motors which derive their energy from fluid motors.
48. CLOCKS, WINDING, MOTORS, SPRING. Clock-trains including in their construction a motor-spring which at regular intervals winds up the mainspring.
- Search Class—**
185—MOTORS, subclass 7, Composite, Weight, Winding, Motor, together with the search classes noted thereunder.
49. CLOCKS, WINDING, MOTORS, THERMAL. Clock-trains wherein the mainspring is wound at intervals by the expansion and contraction of some part acted on by differences of temperature.
50. CLOCKS, ILLUMINATED. Clocks the dials of which are illuminated.
51. CLOCKS, LEVELING DEVICES. Devices connected with clock-cases for leveling the same.
- Search Class—**
46—GAMES AND TOYS, subclass 13, Billiard appliances, Table-levelers.
52. CLOCKS, FRAMES. The supporting structures in a clock in which the arbors are journaled.
53. CLOCKS, CASES. Miscellaneous cases wherein the works of clocks are inclosed.
54. CLOCKS, CASES, CYLINDRICAL. Clock-cases having cylindrical forms.
55. CLOCKS, CASES, MATERIALS. Inventions in clock-cases constructed of particular materials.
56. CLOCKS, CASES, SUPPORTS. Clock-cases, together with supports on or in which the clock is placed.
57. WATCHES. Watches not classifiable elsewhere.
58. WATCHES, CALENDAR. Watch mechanisms for automatically indicating the days of the week, days of the month, the years, or any other calendar or astronomical feature.
- Search Class—**
58—HOROLOGY, subclasses 4, Clocks, Calendar; 5, Clocks, Calendar, Dial, and 6, Clocks, Calendar, Roller.
59. WATCHES, MOVEMENTS. Inventions not classifiable elsewhere covering the movements or trains in watches.
- Search Class—**
58—HOROLOGY, subclass 7, Clocks, Trains.
60. WATCHES, REPEATERS. Watches having mechanism to strike the preceding hour or the hour and fraction thereof at any desired time.
- Search Class—**
58—HOROLOGY, subclass 10, Clocks, Trains, Striking, Repeating.
61. WATCHES, REPEATERS, DOUBLE-SNAIL. Repeating watches having two or more snail-cams for controlling the striking mechanism.
- Search Class—**
58—HOROLOGY, subclass 11, Clocks, Trains, Striking, Repeating, Double-snail.
62. WATCHES, REPEATERS, DOUBLE-SNAIL, TRAINS. Double-snail repeating watches having winding or other trains connected with the striking mechanism.
- Search Class—**
58—HOROLOGY, subclass 11, Clocks, Trains, Striking, Repeating, Double-snail.

CLASS 58—Continued.

63. WATCHES, STEM WINDING AND SETTING. Watches having both stem winding and stem setting attachments, not otherwise classifiable.
64. WATCHES, STEM WINDING AND SETTING, LEVER-SET. Stem winding and setting watches otherwise unclassifiable whose stems are connected with the winding or the setting train by means of a lever.
65. WATCHES, STEM WINDING AND SETTING, LEVER-SET, CLUTCH. Lever-set stem winding and setting watches wherein the connection with the winding or the setting train is made by means of a clutch operated by the lever.
66. WATCHES, STEM WINDING AND SETTING, LEVER-SET, YOKE. Lever-set stem winding and setting watches wherein the connection with the winding or the setting train is made by means of a pivoted yoke operated by the lever, the yoke carrying a pinion or pinions adapted to mesh with a pinion of either train.
67. WATCHES, STEM WINDING AND SETTING, PENDANT-SET. Stem winding and setting watches not elsewhere classifiable wherein the connection with the setting or the winding train is made by means of the longitudinal movement of the pendant-stem in one or the other direction.
68. WATCHES, STEM WINDING AND SETTING, PENDANT-SET, CLUTCH. Pendant-set stem winding and setting watches wherein the connection with the winding or the setting train is made by means of a clutch.
69. WATCHES, STEM WINDING AND SETTING, PENDANT-SET, YOKE, DOUBLE-GEAR. Pendant-set stem winding and setting watches not classifiable elsewhere wherein the connection with the winding or the setting train is made by means of a pivoted yoke, said yoke having a gear at each end for connecting with either train.
70. WATCHES, STEM WINDING AND SETTING, PENDANT-SET, YOKE, DOUBLE-GEAR, CAM. Pendant-set stem winding and setting watches wherein the connection with the winding or the setting train is made by a pivoted yoke having a gear on each end, the yoke being moved by a cam device.
71. WATCHES, STEM WINDING AND SETTING, PENDANT-SET, YOKE, DOUBLE-GEAR, LEVER. Pendant-set stem winding and setting watches wherein the connection with the winding or the setting train is made by a pivoted yoke having a gear on each end, the yoke being moved by a lever device.
72. WATCHES, STEM WINDING AND SETTING, PENDANT-SET, YOKE, SINGLE-GEAR. Pendant-set stem winding and setting watches wherein the connection with the winding or the setting train is made by means of a pivoted yoke operated by the pendant-stem, the yoke carrying a pinion adapted to mesh with a pinion of either train.
73. WATCHES, STEM-WINDING. Stem-winding devices for watches, but not including any stem-setting devices.
74. WATCHES, STOP. Watches not otherwise classifiable provided with devices whereby they may be stopped at will.
75. WATCHES, STOP, SPLIT-SECONDS. Stop-watches having two or more additional seconds-hands to indicate different intervals of time.
76. WATCHES, STOP, COUPLERS, PIVOTED. Stop-watches having pivoted couplers between their stop and start mechanism and their time-trains.
77. WATCHES, STOP, COUPLERS, SLIDING. Stop-watches having sliding couplers between their stop and start mechanism and their time-trains.
78. WATCHES, STOP, POSITIVE. Watches not elsewhere classifiable whose movements are positively stopped by means of a lever or brake placed against or in the path of one of the moving parts.
- Search Class—**
161—TIME-CONTROLLING MECHANISM, subclass 17, Timing Mechanism, Game.
79. WATCHES, STOP, POSITIVE, BALANCE-STOP. Watches having a positive stop mechanism applied to the balance-wheel.
80. WATCHES, WINDING. Winding mechanisms for watches not otherwise classifiable.
81. WATCHES, WINDING, LEVER. Winding devices operated by a lever instead of a key.
82. WATCHES, WINDING, SELF-WINDERS. Watches so constructed as to be wound by the vibrations caused by the movements of the wearer.
- Search Class—**
235—REGISTERS, subclass 105, Pedometers.
83. WATCHES, WINDING, OVERWINDING-PREVENTERS. Devices for preventing the overwinding of watches or clocks.
- Search Class—**
185—MOTORS, subclass 13, Composite, Spring, Winding, Overwinding preventers, together with the search classes noted thereunder.

CLASS 58—Continued.

84. WATCHES, WINDING, ATTACHED KEYS. Winding attachments for watches, comprising keys attached to the watches, either normally kept in the case or carried in the pendant.

85. WATCHES, WINDING, INDICATOR. Devices for showing the degree to which a watch or clock is wound or for operating an indicator when the watch or clock needs winding.

Search Class—

185—MOTORS, subclass 14, Composite, Spring, Winding, Indicator, together with the search classes noted thereunder.

86. WATCHES, BARRELS. Devices for immediately holding the mainspring in the movement and for receiving and distributing power therefrom.

87. WATCHES, BARRELS, MAINSPRING-FASTENERS. Devices for securing the end of the mainspring in the watch-barrel.

88. WATCHES, CASES. Watchcases proper and parts thereof not otherwise classifiable.

Search Class—

58—HOROLOGY, subclass 106.5, Anti-magnetic devices, for anti-magnetic cases.

89. WATCHES, CASES, CONVERTIBLE. Watches having an inner case pivoted within an outer and which can be turned to convert the watch into an open-faced or a hunting-case watch, sometimes called "magic" watches.

90. WATCHES, CASES, DUST-PROOF. Improvements in watchcases for preventing the admission of dust into the movement.

91. WATCHES, CASES, BEZELS. The internally-grooved rings of the case that contain the glass.

92. WATCHES, CASES, CENTERS. The central movement-holding ring of the watchcase.

93. WATCHES, CASES, CENTERS, INTEGRAL. Watchcases having the case-center integral with the front or the back.

94. WATCHES, CASES, MOVEMENT-RINGS. The separate rings in watchcases for holding the movement.

95. WATCHES, CASES, PENDANTS. The post attached to the case-center, which receives the stem and bow; also, any appurtenances thereto not elsewhere classifiable.

96. WATCHES, CASES, PENDANTS, BOW-FASTENERS. Means not otherwise classifiable by which the bow is fastened to the pendant.

97. WATCHES, CASES, PENDANTS, BOW-FASTENERS, PIN OR SCREW. Means employing either a pin or a screw by which the bow is secured to the pendant.

98. WATCHES, CASES, PENDANTS, BOW-FASTENERS, SLEEVE. Means employing a sleeve by which the bow is secured to the pendant.

99. WATCHES, CASES, PENDANTS, STEM-FASTENERS. Devices for securing the stem in the pendant.

100. WATCHES, CASES, SCREW. Watchcases having the front or the back screw-threaded to the case-center.

Search Class—

58—HOROLOGY, subclasses 93, Watches, Cases, Centers, Integral and 94, Watches, Cases, Movement-rings.

101. WATCHES, CASES, SPRINGS. The springs by which the front or the back of the case is opened.

102. WATCHES, CASES, SPRINGS, COVER CONNECTIONS. Patents including both the springs and the connections therefrom to the part opened thereby.

103. WATCHES, CASES, HINGES. The hinges whereby the front or back of the watchcase is united to the center.

104. WATCHES, PLATES. The plates or frames in which the arbors are journaled.

105. WATCHES, PROTECTORS. Devices for protecting the cases of watches.

Search Class—

58—HOROLOGY, subclass 106.5, Anti-magnetic devices, for means for protecting against magnetic influence.

106. WATCHES, TOY. Toy watches comprising cheap and sometimes only partial watch-movements.

106.5. ANTI-MAGNETIC DEVICES. Means specially adapted to protect the mechanism of timepieces from magnetic influence.

Search Class—

175—ELECTRICITY, GENERAL APPLICATIONS, subclass 181, Demagnetizing, for devices for demagnetizing watches and clocks.

107. BALANCES. Horological balance-wheels and parts thereof not elsewhere classifiable.

108. BALANCES, COMPENSATING. Means connected with balances for automatically correcting errors due to thermal changes.

CLASS 58—Continued.

Search Class—

58—HOROLOGY, subclasses 110, Balances, Regulating, Compensating, and 133, Pendulums, Compensation.

109. BALANCES, REGULATING. Devices not otherwise classifiable for controlling the length of the hair-spring.

110. BALANCES, REGULATING, COMPENSATING. Regulating devices operating automatically for correcting errors due to thermal changes.

Search Class—

58—HOROLOGY, subclasses 108, Balances, Compensating, and 133, Pendulums, Compensation.

111. BALANCES, REGULATING, RACK-AND-PINION. Regulating devices including a rack and pinion.

112. BALANCES, REGULATING, SCREW. Regulating devices operated through the medium of a screw.

113. BALANCES, REGULATING, CURB-PINS. Pins on the regulator for controlling the length of the hair-spring.

114. BALANCES, HAIR-SPRINGS. Coiled springs by which the vibrations of the balances are controlled.

115. BALANCES, HAIR-SPRINGS, COLLETS AND STUDS. Means whereby the inner end of the hair-spring is attached to the balance-staff or the outer end to the plate.

116. ESCAPEMENTS. Horological escapements not elsewhere classifiable.

Search Class—

185—MOTORS, for escapements of general application to various mechanisms.

117. ESCAPEMENTS, BALANCE. Escapements not otherwise classifiable cooperating with a balance-wheel.

118. ESCAPEMENTS, BALANCE, CHRONOMETER. Escapements in which the escape-wheel is locked on a pallet carried in a detent and impulse is given by the teeth of the escape-wheel to a pallet on the balance-staff once in every alternate vibration.

119. ESCAPEMENTS, BALANCE, CYLINDER. The cylinder or horizontal escapement is one in which the impulse is given by the teeth of a horizontal wheel acting on a hollow cylinder on the axis of the balance.

120. ESCAPEMENTS, BALANCE, DUPLEX. Escapements in which the escape-wheel has two sets of teeth, one set locking the wheel by pressing on the balance-staff and the other set giving impulse to the balance.

121. ESCAPEMENTS, BALANCE, LEVER. Escapements in which the communication between the pallets and the balance is made by means of two levers, one attached to or carrying the pallets and the other, in the form of a roller with a pin projecting from its face, attached to the balance-staff.

122. ESCAPEMENTS, BALANCE, LEVER, STRAIGHT-LINE. Escapements having the arbors of the balance and the escape-wheel and the pivot of the escape-lever in a straight line.

123. ESCAPEMENTS, PENDULUM. Escapements controlled by a pendulum.

124. ESCAPEMENTS, PENDULUM, GRAVITY. Escapements in which impulse is given to the pendulum by weights falling through a constant distance.

125. DIAL-TRAINS. Trains of gearing connecting the hour and minute hands of a timepiece.

126. DIALS AND HANDS. Combinations of dials and hands of timepieces.

Search Class—

58—HOROLOGY, subclass 125, Dial-trains.

127. DIALS. The plate constituting a horological dial.

Search Class—

58—HOROLOGY, subclasses 4, Clocks, Calendar; 5, Clocks, Calendar, Dial; 6, Clocks, Calendar, Roller; 43, Clocks, Geographical, Disk; 44, Clocks, Geographical, Globe; 58, Watches, Calendar, and 126, Dials and hands.

128. DIALS, SHIFTING FIGURES. Dials for indicating time up to twenty-four hours, they showing the hours up to twelve during the first rotation of the hands, after which the figures are automatically shifted to show hours from thirteen to twenty-four.

129. PENDULUMS. Clock pendulums and parts of the same not elsewhere classifiable.

130. PENDULUMS, METRONOME. Devices for marking time in music.

131. PENDULUMS, TORSION. Pendulums in which the spring or rod receives a twisting strain to oscillate the ball.

132. PENDULUMS, REGULATING. Manually-operated devices for regulating the vibrations of the pendulum.

CLASS 58—Continued.

133. **PENDULUMS, COMPENSATION.** Devices for automatically correcting errors in the length of the pendulum-rod due to thermal changes.

Search Class—

58—HOROLOGY, subclasses 108, Balances, Compensating, and 110, Balances, Regulating, Compensating.

134. **PENDULUMS, BEAT-ADJUSTERS.** Devices connected with a pendulum whereby it is caused to vibrate properly even if the clock should not be exactly level.

135. **PENDULUMS, BALLS.** The weights or "bobs" at the lower end of the pendulum-rod.

136. **SAFETY-WHEELS, BARREL.** Attachments to the mainspring-barrel whereby injury to the train is prevented upon the breaking of the spring.

CLASS 58—Continued.

137. **SAFETY-WHEELS, CENTER.** Attachments to the center-wheel of a timepiece whereby injury to the train is prevented upon the breaking of the mainspring.

138. **CANNON-PINIONS.** The pinion frictionally placed on the center arbor by which the time and dial trains are connected and having a long boss or pipe, to which the minute-hand is attached.

Search Class—

58—HOROLOGY, subclasses 7, Clocks, Trains, and 59, Watches, Movements.

139. **ARBORS AND PINIONS.** The arbors and pinions of timepieces.

140. **STAFFS AND BEARINGS.** Arbors and bearings therefor belonging to balance-wheels or other parts of a time-movement.

141. **SUN-DIALS.** Devices for indicating time by solar shadows.

CLASS 59.—CHAIN, STAPLE, AND HORSESHOE MAKING.**DEFINITIONS.***Class.*

This class includes generally chain, staple, horseshoe, and ox-shoe making, swivel-making being included under Chain-making.

Also the article subclasses of Chains, including general-purpose and ornamental chains and swivels, and the article subclasses of Key-holders.

For further explanation in regard to what may be included in the above art and article subclasses, see the definitions, particularly those given under the head of each of the arts.

Note.—Rolling-machines or rolls designed especially for the manufacture of chains, chain-links, horseshoes, horseshoe bars or calks, and staples in which there is invention in the construction or operation of the means or parts which give the form to the blank or article produced are included in this class; otherwise in class 60, METAL-ROLLING.

Note.—If the invention resides simply in the manner of attaching the dies to the rolls, the patents will be found in class 80, METAL-ROLLING.

Note.—This class is closely related to classes 29, METAL-WORKING; 78, METAL FORGING AND WELDING; 80, METAL-ROLLING; 113, SHEET-METAL WARE, MAKING; 140, WIRE-WORKING; 153, METAL-BENDING, and 164, CUTTING AND PUNCHING SHEETS AND BARS, which classes should be kept in mind in completing a search in this class.

Subclasses.

CHAIN-MAKING. Relates to the broad art of chain-making and includes all patents for machines, apparatus, blanks, and processes relating to the manufacture of chains or links, except such as shall be referred to hereinafter. Includes patents relating to the manufacture of swivels, which are found in subclass 9, Chain-making, swivel-making.

Note.—The manufacture of simple links for car-couplings will be found in appropriate subclasses under this head.

Note.—Electric heating and welding machines and processes comprising any invention in the means of applying or process of application are classified in the appropriate metal heating and working subclasses in class 219, ELECTRIC HEATING AND RHEOSTATS. If, however, the use of electricity is incidental and the claims embrace no novel features relating thereto, the patents will be classified herein.

Note.—Machines which coil the wire or rod into a helix or which coil the helix and cut-off coils or sections to form links are found in class 153, METAL-BENDING, subclass 64, Coiling, and the subclasses thereunder. If the machine, in addition to coiling and cutting, gives link form to the part cut off or assembles such parts into a chain, it will be classified in this class.

1. CHAIN-MAKING. Miscellaneous inventions in chain-making not included in the subclasses under this head.

2. CHAIN-MAKING, BEAD CHAIN. Devices for forming metallic bead chains, said chains usually consisting of hollow balls or beads joined to one another by connecting links.

Note.—For the making of hollow beads from sheet metal, see Class 113 Sheet-metal ware. Making, the subclasses under 38, Die-shaping, particularly subclass 41, Die-shaping, Rolling hollow bodies.

3. CHAIN-MAKING, LOOP-INTERLOCKED. Apparatus for making chains formed of oval or elongated links bent into substantially U shape, the link being passed through the previously-formed link or links before being bent.

Search Class—

59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclasses 13, Chain-making, Sheet-metal, and 15, Chain-making, Sheet-metal, Stamping and bending.

4. CHAIN-MAKING, ROLLER-CHAIN. Devices for forming or uniting the parts or units of a roller-chain.

5. CHAIN-MAKING, SPROCKET-CHAIN. Miscellaneous machines and devices employed in the manufacture of sprocket-chains.

6. CHAIN-MAKING, SPROCKET-CHAIN, SHEET-METAL. Machines for forming sprocket chains or links out of sheet metal.

7. CHAIN-MAKING, SPROCKET-CHAIN, LINK-ASSEMBLING. Machines for assembling and joining together the finished sprocket-links to form a chain.

8. CHAIN-MAKING, SPROCKET-CHAIN, BLANKS AND PROCESSES. Blanks and processes used in making sprocket-chains.

9. CHAIN-MAKING, SWIVEL-MAKING. Apparatus employed in the manufacture of swivels used as connecting means between chains, cables, or similar articles.

CLASS 59—Continued.

10. CHAIN-MAKING, WELDLESS. Machines for forming chains with solid links from a continuous bar or blank by rolling, swaging, or cutting and without bending, winding, or welding. This type of machine usually forms the chain from a bar cruciform in cross-section.

Note.—To distinguish between rolling-machines and machines for making weldless chains by rolling, see note under general class definition.

11. CHAIN-MAKING, WELDLESS, LINK SEPARATION. Machines which separate or cut apart links formed in the manufacture of weldless chains from a continuous bar or rod.

Search Class—

59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 10, Chain-making, Weldless.

12. CHAIN-MAKING, WELDLESS, BLANKS AND PROCESSES. Blanks and processes used in the manufacture of weldless chains.

13. CHAIN-MAKING, SHEET-METAL. Miscellaneous machines and apparatus for making links or chains from sheet metal.

Search Classes—

59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 6, Chain-making, Sprocket-chain, Sheet-metal.

153—METAL-BENDING, appropriate subclasses for machines for crimping, corrugating, beading, bending, and embossing sheet metal.

164—CUTTING AND PUNCHING SHEETS AND BARS, appropriate subclasses.

14. CHAIN-MAKING, SHEET-METAL, PRONG-CONNECTED. Apparatus for making chains from sheet metal having links formed from sheet metal with prongs or projections and corresponding apertures or notches, whereby the links may be connected with one another. Chains of this character are usually designed for ornamental purposes.

15. CHAIN-MAKING, SHEET-METAL, STAMPING AND BENDING. Machines which stamp or cut the link from sheet metal, thread it through the previously-formed link, and bend it back upon itself.

16. CHAIN-MAKING, COMBINED MACHINES. Miscellaneous combined machines not otherwise classifiable.

Search Classes—

59—CHAIN, STAPLE, AND HORSESHOE MAKING, Combined machine subclasses under Horseshoe-making and Staple-making.

29—METAL-WORKING, subclass 34, Combined machines, Forging, bending, cutting, and punching.

17. CHAIN-MAKING, COMBINED MACHINES, COILING, CUTTING, BENDING, CURBING. Machines for forming wire curb-chains by coiling the wire into a helix, cutting it into sections, bending it into link form, the links being assembled to form the chains, and giving to the links a curved or twisted form.

Search Classes—

59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 28, Chain-making, Curbing, for chain-curling machines.

153—METAL-BENDING, subclass 64, Coiling, and the subclasses thereunder, for coiling and cutting machines.

18. CHAIN-MAKING, COMBINED MACHINES, FEEDING, CUTTING, BENDING, WELDING. Machines for performing the above operations in chain-making. Specific feeding means are not shown and described in every case.

19. CHAIN-MAKING, COMBINED MACHINES, FEEDING, CUTTING, BENDING, WRAPPING. Machines which feed a continuous wire or rod to a cutting mechanism, passing it through the previously-formed link, and then bend it into link form, wrapping or twisting the ends of the wire around other portions of the link in order to securely fasten said ends, and so dispense with welding. In some cases no specific feeding or cutting means are shown.

Search Class—

140—WIRE-WORKING, subclasses 72, Article making or forming, Heddle; 88, Article making or forming, Rings; 102, Loop forming; 104, Eye forming.

20. CHAIN-MAKING, COMBINED MACHINES, COILING, CUTTING, ASSEMBLING. Machines for forming chains from a continuous rod or wire by coiling such rod or wire into a helix, cutting off sections to form links, and assembling and uniting the links to form a completed chain.

Search Classes—

140—WIRE-WORKING, subclasses under Article making or forming.

153—METAL-BENDING, subclass 64, Coiling, and the subclasses thereunder, for coiling and cutting machines.

21. CHAIN-MAKING, COMBINED MACHINES, BENDING AND EYE-FORMING. Machines for bending link-blanks into U-shaped links and forming eyes at the ends of the links, the blank generally being thrust through the eyes of the previously formed link before being bent.

CLASS 59—Continued.

Search Classes—

- 59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 3, Chain-making, Loop-interlocked.
29—METAL-WORKING, subclass 3, Special work, Buckle-making.

22. CHAIN-MAKING, COMBINED MACHINES, BENDING AND WELDING. Combined machines and devices for bending the links into form and welding the ends together. In some of the machines of this type the links are automatically assembled before welding. These machines may also include means for completing the act of welding by shaping the links.

Search Class—

- 59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclasses 27, Chain-making, Bending, and 31, Chain-making, Welding.

23. CHAIN-MAKING, COMBINED MACHINES, CUTTING AND BENDING. Combined machines for cutting from a bar, rod, or wire sufficient for a link and then bending it into the general or completed form of a link.

Search Classes—

- 59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 27, Chain-making, Bending, for bending devices for chain-links.
29—METAL-WORKING, subclass 5, Special work, Cotter-pin making.
53—METAL-BENDING, appropriate subclasses, for general-purpose machines for cutting and bending.
140—WIRE-WORKING, subclass 88, Article making or forming, Rings.
164—CUTTING AND PUNCHING SHEETS AND BARS, appropriate subclasses, for feeding and cutting devices.

24. CHAIN-MAKING, COMBINED MACHINES, CUTTING AND BENDING, AUTOMATIC FEED. Combined machines for cutting and bending having automatic means for feeding the rod or wire to the cutting mechanism.

Search Classes—

- 59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclasses 15, Chain-making, Sheet-metal, Stamping and bending; 18, Chain-making, Combined machines, Feeding, cutting, bending, welding; 19, Chain-making, Combined machines, Feeding, cutting, bending, wrapping; 37, Horseshoe-making, Combined machines; 38, Horseshoe-making, Combined machines, Cutting, Bending, shaping, punching and creasing, and the subclasses thereunder; 49, Horseshoe-making, Combined machines, Cutting, bending, shaping, and the subclasses thereunder; 66, Horseshoe-making, Calk-making, and 71, Staple-making, and the subclasses thereunder.
10—BOLT, NAIL, NUT, RIVET AND SCREW MAKING, appropriate subclasses.
29—METAL WORKING, subclass 58, Combined machines, Stock and blank feeders, and subclasses thereunder.
78—METAL FORGING AND WELDING, subclass 27, Work handling mechanism, Wire or strip feeding.
140—WIRE WORKING, subclasses under feeding.
164—CUTTING AND PUNCHING SHEETS AND BARS, in the various subclasses of work, feeding and Feed mechanisms.

25. CHAIN-MAKING, COMBINED MACHINES, CUTTING AND BENDING, AUTOMATIC FEED, LINK-ASSEMBLING. Combined machines for cutting and bending having an automatic feed and in which the links are assembled into a completed chain.

26. CHAIN-MAKING, COMBINED MACHINES, WINDING AND WELDING. Combined machines for making chains by winding several convolutions of the stock or wire into link form and welding the same into an integral link. These machines are usually constructed so that the convolutions of the link being wound shall pass through the previously-formed link. Also machines which simply perform the operation of winding without welding.

Search Classes—

- 80—METAL ROLLING, subclass 5, Annular bodies.
163—METAL-BENDING, subclass 54, Curving and straightening, Roll; also in subclass 64, Coiling, and the subclasses thereunder.

27. CHAIN-MAKING, BENDING. Machines and devices for bending links into complete form in the finished chain or preparatory to the operation of welding.

Search Classes—

- 59—CHAIN, STAPLE AND HORSESHOE MAKING, the subclasses under Combined machines which include the operation of bending; also in the appropriate subclasses under Horseshoe-making and Staple-making.
29—METAL-WORKING, appropriate subclasses.
140—WIRE-WORKING, appropriate subclasses.
163—METAL-BENDING, appropriate subclasses.

28. CHAIN-MAKING, CURBING. Devices for imparting a curb form to chains.

Search Class—

- 59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclasses 16, Chain-making, Combined machines, and 17, Chain-making, Combined machines, Coiling, cutting, bending, curbing.

29. CHAIN-MAKING, SIZING AND TRIMMING. Machines and apparatus for trimming, straightening, stretching, or otherwise imparting uniform dimensions to chain-links after they have received their general form.

Search Classes—

- 59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclasses 22, Chain-making, Combined machines, Bending and welding; 30, Chain-making, Swaging and shaping; 31, Chain-making, Welding, and 33, Chain-making, Welding, Dies.
29—METAL-WORKING, subclass 8, Special work, Finger-ring forming and sizing.
80—METAL-ROLLING, subclass 5, Annular bodies.

CLASS 59—Continued.

30. CHAIN-MAKING, SWAGING AND SHAPING. Machines or devices for giving form to the link by swaging or the like.

Search Classes—

- 59—CHAIN, STAPLE AND HORSESHOE MAKING, subclasses 10, Chain making, Weldless; 22, Chain making, Combined machines, Bending and welding; 33, Chain making, Welding, Dies; 29, Chain making, Sizing and trimming, for machines for trimming the links to give them equal dimensions after they have received their general form.

- 29—METAL-WORKING, subclasses 9, Special work, Finger ring, Sizing and forming; 34, Combined machines, Forging, bending, cutting and punching; and 35, Combined machines, Forging and rolling.

- 78—METAL FORGING AND WELDING.

- 80—METAL-ROLLING, subclass 5, Annular bodies.

- 101—METAL ORNAMENTING, for impressing ornamental form into a link.

31. CHAIN-MAKING, WELDING. Apparatus particularly adapted for use in welding chain-links. All machines in which there is invention in the form of die are included in this group. Includes machines having, in addition to the welding means, means for completing the weld by sizing or shaping the link.

Note.—Welding-machines in which the invention resides entirely in the means for operating the power hammer or press are included in class 78, METAL FORGING AND WELDING, as are also those machines adapted for general welding and having no construction peculiar to chain-welding machines.

For distinction between class 59 and class 219, ELECTRIC HEATING AND RHEOSTATS, see note under definition of Chain-making.

Search Class—

- 59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 16, Chain-making, Combined machines, and appropriate subclasses thereunder; also in subclass 35, Chain-making, Blanks and processes, for processes.

32. CHAIN-MAKING, WELDING, ROTARY FEED. Machines which rotate the links during the act of welding. In some cases the act of rotation threads the link to be welded into the previously-welded link.

33. CHAIN-MAKING, WELDING, DIES. Inventions in the welding-dies *per se*. It includes also such patents as show or claim finishing or sizing dies in addition to the welding-dies.

Search Class—

- 59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 22, Chain-making, Combined machines, Bending and welding.

34. CHAIN-MAKING, WELDING, HOLDING DEVICES. Devices for holding a link or previously-formed part of a chain in a convenient position or for manipulating it during the operation of welding.

Search Classes—

- 59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 31, Chain-making, Welding.
78—METAL FORGING AND WELDING, subclass 101, Work-handling mechanism, Supports.

35. CHAIN-MAKING, BLANKS AND PROCESSES. Blanks for use in chain-making or processes employed in chain-making or link formation.

Note.—Patents having claims both to the chain or link as an article and also to the blank or process will be found in the appropriate subclasses under the head of Chains.

Blanks and processes relating to the manufacture of sprocket-chains are classified in subclass 8, Chain-making, Sprocket-chain, Blanks and processes, and those relating to the manufacture of weldless chains in subclass 12, Chain-making, Weldless, Blanks and processes.

Search Class—

- 78—METAL FORGING AND WELDING, appropriate subclasses for processes of welding not found in this subclass.

HORSESHOE-MAKING. Relates to the broad art of horseshoe-making and includes all patents for machines, apparatus, blanks, and processes relating to the manufacture of horseshoes or horseshoe-calks, except such as are hereinafter mentioned.

Note.—Anvil-vises and vise attachments for anvils adapted for use in horseshoe or calk making or forming are found in class 78, METAL FORGING AND WELDING, where the device simply holds the shoe or calk to be operated upon by some other tool. Where the machine or device is designed to perform any positive operation, it is found in class 59.

Such other attachments as have simply a lug or projection for engaging a hole in the anvil or lie on the face of the anvil without being otherwise attached or connected to it are found in this class.

36. HORSESHOE-MAKING. Miscellaneous horseshoe making inventions not included in the subclasses indented hereunder.

37. HORSESHOE-MAKING, COMBINED MACHINES. Machines performing two or more functions or operations in the manufacture of horseshoes which are not classified in the more specific subclasses.

Note.—This subclass is largely made up of machines which form calks or clips in addition to the other operations of bending, swaging, etc.

38. HORSESHOE-MAKING, COMBINED MACHINES, CUTTING, BENDING, SHAPING, PUNCHING AND CREAMING. Miscellaneous combined machines for performing the above operations. Machines of this type may or may not have means for feeding forward the blank for operation upon by the machine.

CLASS 59—Continued.

Search Classes—

59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclasses 37, Horseshoe-making, Combined machines; 56, Horseshoe-making, Bending; 57, Horseshoe-making, Punching and creasing, and 58, Horseshoe-making, Swaging and shaping.

29—METAL-WORKING, subclass 34, Combined machines, Forging, bending, cutting, and punching.

39. HORSESHOE-MAKING, COMBINED MACHINES, CUTTING, BENDING, SHAPING, PUNCHING AND CREASING, CALK AND CLIP BENDING AND FORMING. Machines which in addition to cutting, bending, shaping, punching, and creasing perform one or more operations relating to the bending or forming of calks or clips.

Search Class—

59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclasses 37, Horseshoe-making, Combined machines, and 65, Horseshoe-making, Calk and clip bending, forming, sharpening, welding.

40. HORSESHOE-MAKING, COMBINED MACHINES, CUTTING, BENDING, SHAPING, PUNCHING AND CREASING, RECIPROCATING JAW OR DIE-BLOCK. Machines in which a reciprocating motion is imparted to the die-block around which the blank is bent or to the jaws which bend the blank around the die-block.

41. HORSESHOE-MAKING, COMBINED MACHINES, CUTTING, BENDING, SHAPING, PUNCHING AND CREASING, RECIPROCATING JAW OR DIE-BLOCK, RECIPROCATING PUNCH AND CREASER. Machines of this type which have in addition to the reciprocating jaw or die-block a reciprocating means for punching and creasing the shoe.

Search Class—

59—CHAIN, STAPLE, AND HORSESHOE-MAKING, subclass 42, Horseshoe-making, Combined machines, Cutting, bending, shaping, punching and creasing, Rotary die-block, for reciprocating punches and creasers.

42. HORSESHOE-MAKING, COMBINED MACHINES, CUTTING, BENDING, SHAPING, PUNCHING AND CREASING, ROTARY DIE-BLOCK. Machines having a rotary die-block or former around which the blank is bent.

43. HORSESHOE-MAKING, COMBINED MACHINES, CUTTING, BENDING, SHAPING, PUNCHING AND CREASING, ROTARY DIE-BLOCK, ROTARY PUNCH AND CREASER. Machines having in addition to the rotary die-block or former around which the blank is bent a rotary means for punching and creasing the blank or shoe.

Search Class—

59—CHAIN, STAPLE, AND HORSESHOE-MAKING, subclass 40, Horseshoe-making, Cutting, bending, shaping, punching and creasing, Reciprocating jaw or die-block, for rotary punches and creasers.

44. HORSESHOE-MAKING, COMBINED MACHINES, BENDING, SHAPING, PUNCHING AND CREASING. Miscellaneous combined machines for performing the operations above enumerated.

Search Class—

59—CHAIN, STAPLE, AND HORSESHOE-MAKING, subclasses 56, Horseshoe-making, Bending; 57, Horseshoe-making, Punching and creasing, and 58, Horseshoe-making, Swaging and shaping.

45. HORSESHOE-MAKING, COMBINED MACHINES, BENDING, SHAPING, PUNCHING AND CREASING, RECIPROCATING JAW OR DIE-BLOCK. Machines in which reciprocating motion is communicated to the die-block around which the blank is bent or to jaws which bend the blank around the die-block.

46. HORSESHOE-MAKING, COMBINED MACHINES, BENDING, SHAPING, PUNCHING AND CREASING, RECIPROCATING JAW OR DIE-BLOCK, RECIPROCATING PUNCH AND CREASER. Combined machines which have reciprocating means for punching and creasing the shoe in addition to the reciprocating jaws or die-block for bending and shaping the blank.

Search Class—

59—CHAIN, STAPLE, AND HORSESHOE-MAKING, subclass 47, Horseshoe-making, Combined machines, Bending, shaping, punching and creasing, Rotary die-block, for reciprocating punches and creasers.

47. HORSESHOE-MAKING, COMBINED MACHINES, BENDING, SHAPING, PUNCHING AND CREASING, ROTARY DIE-BLOCK. Combined machines performing the above operations which have a rotary die-block around which the blank is bent.

48. HORSESHOE-MAKING, COMBINED MACHINES, BENDING, SHAPING, PUNCHING AND CREASING, ROTARY DIE-BLOCK, ROTARY PUNCH AND CREASER. Combined bending, shaping, punching, and creasing, rotary die-block machines having in addition to the rotary die block rotary means for punching and creasing the shoe.

Search Class—

59—CHAIN, STAPLE, AND HORSESHOE-MAKING, subclass 45, Horseshoe-making, Combined machines, Bending, shaping, punching and creasing, Reciprocating jaw or die-block for rotary punches and creasers.

CLASS 59—Continued.

49. HORSESHOE-MAKING, COMBINED MACHINES, CUTTING, BENDING, SHAPING. Miscellaneous combined machines performing the above operations. Machines of this type may or may not have means for feeding forward the blanks to the cutting apparatus.

Search Classes—

59—CHAIN, STAPLE, AND HORSESHOE-MAKING, subclasses 38, Horseshoe-making, Combined machines, Cutting, bending, shaping, punching and creasing; 56, Horseshoe-making, Bending, and 58, Horseshoe-making, Swaging and shaping.

164—CUTTING AND PUNCHING SHEETS AND BARS, appropriate subclasses for cutting-machines.

50. HORSESHOE-MAKING, COMBINED MACHINES, CUTTING, BENDING, SHAPING, RECIPROCATING DIE-BLOCK. Combined cutting, bending, and shaping horseshoe-making machines having a reciprocating die-block or former around which the blank is bent.

51. HORSESHOE-MAKING, COMBINED MACHINES, CUTTING, BENDING, SHAPING, ROTARY DIE-BLOCK. Combined cutting, bending, and shaping horseshoe-making machines characterized by a rotary die-block or former around which the blank is bent in the formation of the shoe.

52. HORSESHOE-MAKING, COMBINED MACHINES, BENDING AND SHAPING. Miscellaneous machines for bending the blank into the form of a horseshoe and at the same time or subsequently giving shape to the shoe by swaging or other means.

Search Class—

59—CHAIN, STAPLE, AND HORSESHOE-MAKING, subclasses 56, Horseshoe-making, Bending, and 58, Horseshoe-making, Swaging and shaping.

53. HORSESHOE-MAKING, COMBINED MACHINES, BENDING AND SHAPING, RECIPROCATING DIE-BLOCK. Machines having a reciprocating die-block or former around which the blank is bent.

54. HORSESHOE-MAKING, COMBINED MACHINES, BENDING AND SHAPING, ROTARY DIE-BLOCK. Machines having a rotary die-block or former around which the blank is bent.

55. HORSESHOE-MAKING, COMBINED MACHINES, SHAPING, PUNCHING AND CREASING. Combined machines for shaping the shoe and also punching or creasing, or both.

Search Class—

59—CHAIN, STAPLE, AND HORSESHOE-MAKING, subclasses 63, Horseshoe-making, Blanks and bars, Rolling, for shaping and punching and creasing before the blank is bent, 57, Horseshoe-making, Punching and creasing, and 58, Horseshoe-making, Swaging and shaping.

56. HORSESHOE-MAKING, BENDING. Machines or devices particularly designed for bending the bar or blank into the general form or shape of a shoe.

Search Classes—

59—CHAIN, STAPLE, AND HORSESHOE-MAKING, in appropriate subclasses under the heads of Chain-making and Staple-making; subclass 52, Horseshoe-making, Combined machines, Bending and shaping, and the subclasses thereunder for machines which thicken the heels in addition to bending.

29—METAL-WORKING, appropriate subclasses.

153—METAL-BENDING, appropriate subclasses.

57. HORSESHOE-MAKING, PUNCHING AND CREASING. Machines and apparatus for performing either one or both the above operations.

Search Classes—

59—CHAIN, STAPLE, AND HORSESHOE-MAKING, subclass 37, Combined machines, and the subclasses thereunder; also subclasses 60, Horseshoe-making, Dies and tools, and 63, Horseshoe-making, Blanks and bars, Rolling.

164—CUTTING AND PUNCHING SHEETS AND BARS, appropriate subclasses, for punching-machines.

58. HORSESHOE-MAKING, SWAGING AND SHAPING. Machines and devices for swaging, rolling, or in any manner shaping or giving form to the shoe. May include means for thickening up heels or ends of shoes.

Search Class—

59—CHAIN, STAPLE, AND HORSESHOE-MAKING, subclasses 37, Horseshoe-making, Combined machines, and appropriate subclasses thereunder; 60, Horseshoe-making, Dies and tools, and 63, Horseshoe-making, Blanks and bars, Rolling.

59. HORSESHOE-MAKING, TRIMMING AND BUR-REMOVING. Machines and devices for trimming horseshoes or for removing the burs raised in the operations of punching and creasing.

Search Classes—

59—CHAIN, STAPLE, AND HORSESHOE-MAKING, subclass 37, Horseshoe-making, Combined machines.

29—METAL-WORKING, appropriate subclasses.

164—CUTTING AND PUNCHING SHEETS AND BARS, appropriate subclasses.

60. HORSESHOE-MAKING, DIES AND TOOLS. Dies designed to be used in forming or making horseshoes; also tools for use in making or shaping calks and horseshoes and not adapted for general purposes.

CLASS 59—Continued.

Search Classes—

- 59—CHAIN, STAPLE, AND HORSESHOE-MAKING, subclass 61, Horseshoe-making, Processes; subclasses 65, Horseshoe-making, Calk and clip bending, Forming, sharpening, welding, and 66, Horseshoe-making, Calk-making for dies for forming calks.
- 168—FARRIERY, for such tools as operate on the shoe when it is on the horse's foot.

61. HORSESHOE-MAKING, PROCESSES. The title indicates the contents of this subclass.

Search Class—

- 59—CHAIN, STAPLE, AND HORSESHOE-MAKING, subclass 64, Horseshoe-making, Blanks and bars, Rolling, Processes, for processes for rolling blanks or bars; subclass 68, Horseshoe-making, Calk-making, Processes, for processes for making calks.

62. HORSESHOE-MAKING, BLANKS AND BARS. Blanks and bars designed especially for use in the manufacture of horseshoes; also machines and apparatus for producing blanks and bars which are not classified in the subclasses under this head.
- Note.—Patents having claims both to the blank or bar and to the shoe are classified in class 168, FARRIERY.

Search Classes—

- 59—CHAIN, STAPLE, AND HORSESHOE-MAKING, subclass 61, Horseshoe-making, Processes.
- 168—FARRIERY, subclasses 4, Shoes, and 24, Shoes, Shape.

63. HORSESHOE-MAKING, BLANKS AND BARS, ROLLING. Rolling-machines and rolls for forming blanks or bars particularly designed for horseshoes. One or more of the operations of beveling, punching, and creasing or calk-forming may be performed during the rolling of the blank. Does not include machines which bend the blank into the general form of horseshoe or which operate on the blank after it has been so bent.

Note.—To distinguish between the machines of this group and those found in class 80, METAL-ROLLING, see note under the general definition of this class.

Search Classes—

- 59—CHAIN, STAPLE, AND HORSESHOE-MAKING, subclass 57, Horseshoe-making, Punching and creasing, for machines with rolls which simply punch and crease the blank; subclasses 66, Horseshoe-making, Calk-making, 67, Horseshoe-making, Calk-making, Blanks and bars, and 68, Horseshoe-making, Calk-making, Processes for rolling-machines for forming calks.
- 78—METAL FORGING AND WELDING, subclass 90, Welding, Rolling.
- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 28, Cutting, Die-machines, Roller-die.

64. HORSESHOE-MAKING, BLANKS AND BARS, ROLLING, PROCESSES. Processes or methods for producing blanks and bars for horseshoes by rolling.

65. HORSESHOE-MAKING, CALK AND CLIP BENDING, FORMING, SHARPENING, WELDING. Machines and devices which perform one or more of the above operations such as show means for forming the calk or clip from the horseshoe-blank or operating upon the calk in connection with the shoe.

Note.—The thickening of the heels may be included in the operation of shaping in subclass 58, Horseshoe-making, Swaging and shaping, or in any of the subclasses under Combined machines which include shaping.

Search Classes—

- 59—CHAIN, STAPLE, AND HORSESHOE-MAKING, subclasses 37, Horseshoe-making, Combined machines; 39, Horseshoe-making, Combined machines, Cutting, bending, shaping, punching, and creasing, Calk and clip bending and forming, and 66, Horseshoe-making, Calk-making and subclasses thereunder for machines which form the calks apart from the shoe.
- 78—METAL FORGING AND WELDING, subclasses 3, Forging, Anvil-vises; 4, Forging, Anvil-vises, Foot, and 5, Forging, Anvils, and the subclasses thereunder, for anvil-vises and vise attachments. See note under general definition to distinguish between the devices included in this subclass and anvil vises and attachments.
- 168—FARRIERY, for machines for sharpening calks when the shoe is on the horse's foot.

66. HORSESHOE-MAKING, CALK-MAKING. Apparatus for making horseshoe-calks.

Note.—For distinction between this subclass and subclass 65, Horseshoe-making, Calk and clip bending, forming, sharpening, welding, see note under the definition of that subclass.

67. HORSESHOE-MAKING, CALK-MAKING, BLANKS AND BARS. Blanks and bars designed for use in the manufacture of horseshoe-calks or from which the calks are cut.

68. HORSESHOE-MAKING, CALK-MAKING, PROCESSES. Processes or methods for making or treating calks or the blanks or bars from which the calks are made.

69. HORSESHOE-MAKING, CALK-MAKING, CALKS. Includes calks which are not removable and in which there is invention in the means for attaching them to the shoes.

Note.—For calks not included in this subclass, see class 168, FARRIERY.

70. OX-SHOE MAKING. Miscellaneous machines, apparatus, blanks, and processes particularly designed for use in the manufacture of ox-shoes.

CLASS 59—Continued.

Note.—This art is analogous to that of horseshoe-making, and in most cases the search should be completed by reference to the appropriate subclasses under Horseshoe-making.

STAPLE-MAKING. Machines, apparatus, blanks, and processes for making or forming staples of general U shape having legs substantially equal in length and adapted to be driven into wood or other material, including staples for general purposes and such as are made by machines which can not be classified in the specific art classes and subclasses.

Note.—For distinction between classes 59, CHAIN, STAPLE, AND HORSESHOE MAKING, and 80, METAL-ROLLING, see note under general definition of this class.

Note.—For machines for forming staples for fastening buttons to shoes, see class 29, METAL-WORKING, subclass 4, Special work, Button-fastener making.

Note.—For machines for making staples for paper-fasteners, see class 29, METAL-WORKING, subclass 13, Special work, Paper-fastener making.

Note.—For machines which both form the staple and drive it, see class 1, NAILING AND STAPLING.

Note.—For machines for forming staples and setting shoe-buttons therewith, see class 218, BUTTON, EYELET, AND RIVET SETTING, subclass 8, Machines, Button, Staple-fastener, Staple making and setting.

Note.—For forming clips from wire, see class 140, WIRE-WORKING.

Note.—For tools for bending wire into U shape, see class 81, TOOLS.

Note.—For bending devices, search should be made in class 153, METAL-BENDING; also in this class in the subclasses of Bending under Chain-making and Horseshoe-making.

Note.—For pointing devices, search should be made in class 10, BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, particularly in subclasses 31, Nail-making, Cut nails, Cutting and pointing, and 59, Nail-making, Wrought nails, Spikes, Pointing.

Note.—For pointing and barbing, search class 10, BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 53, Nail-making, Wire nails, Dies.

Search Class—

- 29—METAL-WORKING, subclasses 3, Special work, Buckle-making and 5, Special work, Cotter-pin making.

71. STAPLE-MAKING. Miscellaneous staple-making inventions not included in the specific subclasses under this head.

72. STAPLE-MAKING, SHEET-METAL. Machines for making staples from sheet-metal strips or plates.

73. STAPLE-MAKING, CUTTING, BENDING, BARBING. Combined machines which perform the operations of cutting, bending, and barbing or corrugating. This type of machine may or may not have an automatic feeding mechanism for feeding the wire to the cutting apparatus.

Note.—See notes under general head of Staple-making.

Search Classes—

- 140—WIRE-WORKING, subclass 105, Crimping.
- 153—METAL-BENDING, subclass 68, Corrugating, and the subclasses thereunder.

74. STAPLE-MAKING, CUTTING, BENDING, POINT-FORMING. Machines which perform the above operations, the point-forming operation being distinct and separate from the operation of cutting the wire or rod into lengths.

Note.—See notes under general head of Staple-making. Many wire-pointing devices will be found in the subclasses under Power-hammers and presses in class 78, METAL FORGING AND WELDING.

Search Class—

- 59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 71, Staple-making.

75. STAPLE-MAKING, CUTTING, AND BENDING. Machines for cutting the wire into lengths and bending into staple form. These machines may or may not have an automatic feeding mechanism, and the cutting mechanism may also operate to point the staples.

Search Class—

- 59—CHAIN, STAPLE, AND HORSESHOE MAKING, appropriate subclasses under Chain-making and Horseshoe-making.

76. STAPLE-MAKING, CUTTING AND BENDING, ROTARY FORMER. Machines for cutting and bending having a rotary former or die-block around which the staple is bent or rotary jaws or lugs for bending it around a stationary die-block.

77. STAPLE-MAKING, BLANKS AND PROCESSES. Processes of manufacture and blanks or bars designed to be used in staple-making.

Note.—Patents having claims to both the article and process or method are found in class 85, DRIVEN, HEADED, AND SCREW-THREADED FASTENINGS, subclass 49, Staples.

CHAINS. Under this head are included general-purpose and ornamental chains, also swivels. The group does not include patents showing bars, beads, links, or rings strung upon or attached to parallel flexible elements, or lugs or projections attached to continuous flexible elements as belts or cables, etc. Such devices will be found generally in class 74, MACHINE ELEMENTS, or in class 63, JEWELRY, depending upon whether they are designed as machine elements or for jewelry or personal wear.

Note.—Sprocket-chains including dredger and elevator chains are found in class 74, MACHINE ELEMENTS.

CLASS 59—Continued.

All chains having projections for engaging depressions in sprocket-wheels and generally chains with ball-and-socket joints will be classified with sprocket-chains.
For chains for chain-pumps, search in class 103, PUMPS, subclass 6, Chain.

78. CHAINS. Miscellaneous chains not included in the subclasses indented hereunder.

79. CHAINS, ELASTIC. Chains which upon the application of tension will be extended and will automatically resume their normal length when the tension is removed.

Search Classes—

21—CARRIAGES AND WAGONS, subclasses 63, Tongue-supports; 70, Draft-equalizers; 78, Whiffletree-hooks, and 79, Whiffletrees.

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 268, Resilient connections.

54—HARNESSES, subclass 86, Elastic connections.

74—MACHINE ELEMENTS, subclasses 62, Belts, and 66, Belts, Round; 72, Elastic tension devices, and the subclasses thereunder for elastic links.

97—PLOWES, subclass 4, Clevises.

114—SHIPS, subclass 213, Tension-relievers, and the subclasses thereunder.

80. CHAINS, ORNAMENTAL. Chains ornamental in appearance designed for jewelry or personal wear, and includes chains having alternate or different links composed of different materials, or the links joined in a manner to render the chain ornamental in appearance, or the individual links composed of different metals or materials which render them ornamental in appearance, or having parts or features rendering the chains ornamental in appearance, but which parts or features would possess no particular utility in a general-purpose chain. Metallic bead chains are included in this subclass.

Note.—Where the invention resides in the structure of an ornamental fabric *per se* and does not include features characteristic of chains, it will be classified in class 63, JEWELRY, appropriate subclasses or class 245, Wire Fabrics and Structure, appropriate subclasses.

This subclass does not include wire curb-chains or chains made up of twisted-wire links. Such chains are found in this class, subclass 83, Chains, Wire.

Search Class—

165—DESIGNS, under Ornamental chains.

81. CHAINS, ORNAMENTAL, MULTISTRAND ROLLER. Chains composed of two or more parallel rows or strands of roller links or beads having means extending transversely of the chain for connecting them.

82. CHAINS, ORNAMENTAL, LINKS. Inventions limited to the construction of the link.

Search Class—

165—DESIGNS, under Ornamental chains.

83. CHAINS, WIRE. Chains composed of wire links or elements. If the invention be limited to the link structure, the patents will be classified in the appropriate subclass under the head of Links.

Note.—As to what wire chains should be included under ornamental chains, see definition of subclass 80, Chains, Ornamental, herein.

Elastic wire chains will be found in subclass 79, Chains, Elastic.

Search Classes—

74—MACHINE ELEMENTS, subclass 67, Belts, Woven-wire.

245—WIRE FABRICS AND STRUCTURE, subclass 4, Fabrics, Chain.

84. CHAINS, LINKS. Miscellaneous inventions in the construction of the link. This subclass includes links made up of two or more parts or composed of different materials.

Note.—Plain oval or elongated car-coupling links will be found in this subclass and also in subclass 90, Chains, Links, One-piece.

Search Class—

59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 82, Chains, Ornamental, Links, for ornamental links.

85. CHAINS, LINKS, DETACHABLE. Links or coupling devices of the general form of a chain-link which are designed to replace broken links or connect chains or parts of chains without heating or welding. These links should be capable of receiving two chain-links and furnishing bearings for the same, one at each end of the detachable link.

Note.—This subclass does not include hooks or coupling members or devices which are especially designed for other purposes and are classifiable elsewhere, as whiffletree-connectors, clevises, etc.

Lap links or rings designed for general use and which answer the above requirements will be included in this subclass.

For links for connecting sprocket-chains, see class 74, MACHINE ELEMENTS, subclass 49, Gearing, Sprocket-chains, Connectors.

Search Classes—

59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 96, Key-holders, and the subclasses thereunder.

21—CARRIAGES AND WAGONS, subclasses 78, Whiffletree-hooks, and 79, Whiffletrees.

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 231, Snap-hooks, and the subclasses thereunder.

54—HARNESSES, subclasses 30, Hame and trace connectors, and 53, Traces, Whiffletree-connectors.

114—SHIPS, subclasses 113, Sails and rigging, Hoops and connections, and 114, Sails and rigging, Cringles and hanks.

CLASS 59—Continued.

86. CHAINS, LINKS, DETACHABLE, SHACKLES. Couplings for chains or parts of chains comprising U or link shaped members pivoted together by a removable pin and having means for normally retaining the pin in position.

Search Classes—

59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 85, Chains, Links, Detachable.

24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 123, Cord and rope holders, Couplings and sockets, and 201, Separable fasteners, and the subclasses thereunder.

97—PLOWES, subclass 4, Clevises.

114—SHIPS, subclass 114, Sails and rigging, Cringles and hanks.

87. CHAINS, LINKS, DETACHABLE, DOUBLE-LAP. Links comprising two main members, usually constituting the sides of the links, which members overlap each other at and for some distance adjacent their extremities. The members may or may not have interlocking lugs and recesses.

88. CHAINS, LINKS, DETACHABLE, DOUBLE-LAP, PIVOTED. Double-lap links which are pivoted together or have means for maintaining them in pivotal relation.

89. CHAINS, LINKS, DETACHABLE, PIVOTED CLOSURE. Links having pivoted closures which may or may not have locking means.

Search Classes—

59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 96, Key-holders.

24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 231, Snap-hooks; 232, Snap-hooks, Pivoted, and the subclasses thereunder, and 241, Snap-hooks, Locking devices.

90. CHAINS, LINKS, ONE-PIECE. Such links as are formed of a single piece of metal or other material.

Note.—Composite links made up of different metals will be found in subclass 84, Chains, Links.

91. CHAINS, LINKS, ONE-PIECE, SHEET-METAL. The title is self-explanatory.

Search Classes—

59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclasses 80, Chains, Ornamental, and 82, Chains, Ornamental, Links.

74—MACHINE ELEMENTS, subclass 44, Gearing, Sprocket-chains, Solid link and coupler.

92. CHAINS, LINKS, ONE-PIECE, WRAPPED AND TWISTED. Links usually formed from wire having their ends wrapped or twisted about other portions of the links, thereby securely fastening said ends and dispensing with welding.

93. CHAINS, ATTACHMENTS. Various devices not otherwise classifiable, such as hooks, bars, and rings to be attached at or intermediate the ends of the chain and becoming a part of and being used in connection with the chain.

Search Classes—

21—CARRIAGES AND WAGONS, subclasses 78, Whiffletree-hooks, and 79, Whiffletrees.

24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 116, Cord and rope holders, Chain, and 123, Cord and rope holders, Couplings and sockets.

54—HARNESSES, subclasses 30, Hame and trace connectors, and 53, Traces, Whiffletree-connectors.

63—JEWELRY, subclass 9, Watch-chain attachments.

94. CHAINS, ATTACHMENTS, HOOKS AND GRABS. Hooks and grabs to be attached to a chain and constructed to engage a link at any desired point in the chain.

Search Classes—

9—BOATS AND BUOYS, subclass 23, Hoisting and lowering devices, Detaching devices, and 57, Hoisting, subclass 128, Hoisting-hooks, Releasing, for releasing hooks.

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 231, Snap-hooks, and the subclasses thereunder.

57—HOISTING, subclass 127, Hoisting-hooks.

248—SUPPORTS, subclass 22, Hooks, and the subclasses thereunder.

95. CHAINS, SWIVELS. Includes all devices in which the invention resides in the swivel *per se*.

Search Classes—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 240, Snap-hooks, Watch-chain attaching, for swiveling devices shown with snap-hooks for attaching a watch to a chain.

43—FISHING AND TRAPPING, subclasses 7, Fishing, Hooks, and 30, Fishing, Hooks, Artificial bait.

46—GAMES AND TOYS, subclass 69, Exercising-machines.

103—PUMPS, subclass 6, Chain.

166—ARTESIAN AND OIL WELLS, subclass 3, Drilling and boring for swivels used in drilling.

96. KEY-HOLDERS. Devices especially designed for holding keys.

Note.—Where there is means for attachment to the dress or other object, the device will be classified in class 24, BUCKLES, BUTTONS, CLASPS, ETC.

Search Classes—

59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 85, Chains, Links, Detachable, and the subclasses thereunder.

7—COMPOUND TOOLS, subclass 1, Miscellaneous, for key-holders combined with other articles or tools.

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 201, Separable fasteners, and the subclasses thereunder, and subclass 231, Snap-hooks, and the subclasses thereunder.

CLASS 59—Continued.

97. **KEY-HOLDERS, FLEXIBLE.** Key-holders having flexible members for holding the keys.
98. **KEY-HOLDERS, ONE-PIECE.** Key-holders formed of one piece of sheet metal, wire, or other material.
- Search Class—**
59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 85, Chains, Links, Detachable, and the subclasses thereunder.

CLASS 59—Continued.

99. **KEY-HOLDERS, ROTARY AND SLIDING CLOSURES.** Key-holders in which the openings through which the keys are introduced are closed by sliding or rotary members or members having both a sliding and rotary movement.
- Note.**—Such key-rings as include a threaded closure for travel upon one end of the ring are included in this subclass.
- Search Class—**
59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 85, Chains, Links, Detachable.

CLASS 60.—MISCELLANEOUS HEAT-ENGINE PLANTS.**DEFINITIONS.***Class.*

This class includes engines, plants, and systems adapted to translate and apply the power of heated bodies that are not included in the definitions of other classes.

A discussion of the relation of this class to other classes will be found in the notes below.

Patents claiming the structure of the car or carriage upon which the engine is used are classified in the class in which such carriage is classified and claims to the engine cross-referenced to this class.

Note.—In class 42, FIREARMS, are found motors using the explosion-gases for working the firearms.

Note.—In class 43, GAS, HEATING AND ILLUMINATING, are found devices for generating gas and also making use of the pressure of natural gas by using it to work an engine of the ordinary steam-engine type and storing the gas after use in a receiver.

Note.—In class 89, ORDNANCE, are found motors that make use of the energy of the explosion-gases to assist in working the ordnance.

Note.—In class 103, PUMPS, and in class 160, STEAM AND VACUUM PUMPS, will be found devices whose sole purpose is to raise water.

Note.—In class 110, FURNACES, are found furnaces for the generation of heat; but when the furnace forms an indivisible part of the engine it is classified in this class, unless its character is such as properly falls within the definition of class 121, STEAM-ENGINES, or class 123, INTERNAL-COMBUSTION ENGINES.

Note.—Motors inseparably connected with the structure of a ship, boat, or torpedo are found in class 114, SHIPS, or in class 115, MARINE PROPULSION, except devices found in this class, subclass 3, Boat and torpedo.

Note.—In class 121, STEAM-ENGINES, are placed patents for engines using steam, air, or other gas when the structure is adapted to use steam as a motor fluid as well as any other gas, although the patentee intends only air to be used in the engine.

Note.—Engines that are adapted only for using air as a motor fluid are placed in class 230, AIR AND GAS PUMPS.

Note.—Class 121, STEAM-ENGINES, contains patents for general combination steam plants; but when such plants or engines claim construction for the use of a plurality of motor fluids, like steam, air, or other vapors, either mixed or unmixed, then the engine, plant, or system will be found in patents classified in this class.

Note.—Class 122, LIQUID HEATERS AND VAPORIZERS, is broadly the class of pressure-generators; but patents for devices that are especially adapted for generating pressure of air or other gases or vapor from combustible or volatile liquids by heat where provision is made for such generation that would not ordinarily be used for generation of steam are classified in class 60, MISCELLANEOUS HEAT-ENGINE PLANTS.

Note.—Engines and plants that do not fall under the definition of class 123, INTERNAL-COMBUSTION ENGINES, but that are of an analogous nature, are classified in this class.

Note.—This class does not include heat-engines that are mere adjunctive devices for controlling parts of another mechanism—for example, thermostats and motors for fluid-pressure dampers, in class 236, DAMPERS, AUTOMATIC; but see definition to subclass 2, Atmospheric and solar, in this class.

Note.—Heat-motors of a type similar to those noted above and those made use of for winding up a spring-motor in class 185, MOTORS, or a clock, class 58, HOROLOGY, are classified in class 60, MISCELLANEOUS HEAT-ENGINE PLANTS, unless the clock structure or specific connecting mechanism is claimed.

Note.—For explosion-motors intimately connected with mechanism for turning a hydraulic motor, see classes 123, INTERNAL-COMBUSTION ENGINES, and 138, HYDRAULIC MOTORS.

Subclasses.

1. MISCELLANEOUS. Miscellaneous devices pertaining to the subject-matter of this class and processes that are not found in other subclasses below.

Search Classes—

- 48—GAS, HEATING AND ILLUMINATING, subclass 196, Natural.
- 103—PUMPS, subclass 67, Fluid-motive power.
- 114—SHIPS, subclass 20, Torpedoes.
- 115—MARINE PROPULSION, subclasses 11, Jet, and 13, Jet, explosive.
- 121—STEAM-ENGINES, generally.
- 122—LIQUID HEATERS AND VAPORIZERS, generally.
- 123—INTERNAL-COMBUSTION ENGINES, generally.
- 138—HYDRAULIC MOTORS, generally.
- 160—STEAM AND VACUUM PUMPS.
- 185—MOTORS.
- 230—AIR AND GAS PUMPS, generally.

2. ATMOSPHERIC AND SOLAR. Plants designed to make use of the heat of the sun, atmosphere, or natural springs to work the motor.

Note.—Claims to the structure of a solar heater per se are classified in class 126, STOVES AND FURNACES, subclass 82, Heaters, Solar; combinations of solar heaters with other things are classified in accordance with the application.

CLASS 60—Continued.

3. BOAT AND TORPEDO. Motor plants that sustain a special relation to a boat or torpedo in general arrangement, but not enough boat structure to be included in classes 114, SHIPS, or 115, MARINE PROPULSION.

Search Class—

114—SHIPS, subclass 20, Torpedo.

4. ROTARY ENGINE. Heat-engine plants having a rotary engine.

Search Classes—

- 121—STEAM-ENGINES, subclasses 56, Rotary, Impact, and 61, Rotary, Impact, Reaction.
- 123—INTERNAL-COMBUSTION ENGINES, subclass 8, Rotary, and subclasses thereunder.

5. ROTARY ENGINE, INJECTOR. Plants with rotary engines where the jet of explosion or pressure gases draw in by injector action a fluid of greater specific gravity, like water or mercury.

Search Class—

121—STEAM-ENGINES, subclass 59, Rotary, Impact, Injector.

6. VOLATILE LIQUID. Plants and engines where a volatile liquid is used for a motor fluid—such as ammonia liquid, naphtha, or carbon bisulfid—such liquid being vaporized and the vapor used to work an engine in a manner like that of steam and having means for the recovery of the vapor for reuse.

7. VOLATILE LIQUID, LIQUID-BURNER. Devices for generating pressure and using for power purposes a combustible volatile liquid, the whole or a part of the liquid being burned to generate the pressure.

8. STEAM, COMBUSTION-PRODUCTS INJECTED. Steam-power plants where the steam-pressure is generated by introduction of combustion-gases into the boiler and the combined products are used to work the engine.

9. STEAM, AIR-INJECTED. Steam-generating plants that inject air into the boiler, steam-pipe, or engine to mix with the steam.

10. STEAM, AIR-INJECTED, AUXILIARY. Devices for injecting air into the steam-space for the purpose of running the steam-engine until steam can be generated in the boiler; especially designed for fire-engines.

11. HOT AIR, LIQUID-HEATED. Engines and plants using hot air as a motive fluid, the energy of which is obtained from a heated liquid.

12. HOT AIR, LIQUID-HEATED, SPRAY. Hot-air engines and plants using air as the motive fluid, the heat being applied to it by means of a hot-water spray. There may be a cold-water spray also cooling the air on the opposite side of the piston.

13. HOT AIR, CONTINUAL AIR-SUPPLY. Hot-air engines and plants where a continual fresh supply of air is heated and discharged after it is used to work the piston.

Note.—For vacuum-engines, see class 60, MISCELLANEOUS HEAT-ENGINE PLANTS, subclass 19, Vacuum, Air.

14. HOT AIR, CONTINUAL AIR-SUPPLY, COMBUSTION-PRODUCTS INJECTED. Hot-air engines and plants where the products of combustion mix with the air that is used to work the engine.

Search Class—

123—INTERNAL COMBUSTION ENGINES, especially subclass 23, Solid fuel.

15. HOT AIR, CONTINUAL AIR-SUPPLY, COMBUSTION-PRODUCTS INJECTED, EXPLOSION. Hot-air engines and plants where the energy is obtained from an explosive compound to work the engine.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, appropriate subclasses, especially subclass 24, Gunpowder.

16. HOT AIR, CONTINUAL AIR-SUPPLY, COMBUSTION-PRODUCTS INJECTED, WATER-INJECTED. Hot-air engines where the combustion products and water enter the air-supply.

17. HOT AIR, CONSTANT MASS. Hot-air engines and plants where the same volume of air is alternately heated and cooled for working the engine. Provision is generally made for supplying air for leakage.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclass 22, Internal combustion and air.

18. HOT AIR, CONSTANT MASS, VAPOR. Hot-air constant mass engines in which a liquid is used to make a vapor for the working fluid or in which air and vapor are mixed.

Search Class—

121—STEAM-ENGINES, subclass 1, Combined engine and boiler.

CLASS 60—Continued.

19. **VACUUM, AIR.** Engines where the cooling of the air produces a vacuum in the cylinder or chamber communicating with the cylinder, the atmospheric pressure then moving the piston.

Search Classes—

121—STEAM-ENGINES, subclasses 1, Combined engine and boiler, and 18, Portable.

123—INTERNAL-COMBUSTION ENGINES, subclass 33, Atmospheric.

20. **VACUUM, AIR, VAPOR.** Engines where the working fluid is hot air and a vapor, generally of water, the air and vapor being suddenly cooled, forming a vacuum in the cylinder or a chamber connecting with the cylinder, the atmospheric pressure moving the piston.

21. **VACUUM, EJECTOR.** Devices where some form of pump is used to create a vacuum on one side of the piston—for example, by burning a fluid, causing an ejector action.

22. **VACUUM, EXPLOSION.** Devices where an explosive mixture is used to form a vacuum in a chamber connected with the engine-cylinder.

23. **SEPARATE FLUID.** Engines using two or more fluids either in separate engines or on opposite sides of the piston in the same engine without mixing.

24. **SEPARATE FLUID, WASTE HEAT.** Devices where one fluid is used to work an engine and the exhaust is used to vaporize another liquid to use in another engine.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclass 6, Combined devices, Internal combustion and fluid-pressure, Waste-heat utilizing.

25. **LIQUEFIED GAS.** Plants for using a liquefied gas, such gas—like air or carbon dioxide, for example—receiving additional heat before it is exhausted from the engine. Plants having a tank of compressed air that work similarly are also classified herein.

Search Classes—

21—CARRIAGES AND WAGONS, subclass 90, Motor-vehicles.

105—RAILWAY ROLLING-STOCK, subclass 28, Cars, Steam, Street.

208—VELOCIPEDS, subclasses under Bicycles, Propulsion, and Polycycles, Propulsion, generally.

230—AIR AND GAS PUMPS, generally, for similar devices where no heat is used.

26. **GRAVITY.** Devices having one or more receptacles containing a fluid to which heat is applied which transfers the liquid to another part of the device, forming an unstable equilibrium, causing the device to rotate or oscillate by gravity.

27. **BUOYANCY.** Devices having a receptacle filled with a liquid in which is the motor that is caused to move by steam or air or a mixture of them, displacing the liquid in the buckets on one side of the motor, causing it to move through the buoyancy of the gas in the buckets.

28. **PRESSURE-GENERATORS.** Devices for generating pressure for purposes disclosed by the definition of the main class title.

Note.—For steam, search class 122, LIQUID HEATERS AND VAPORIZERS, unless the products of combustion, air, or other gases are mixed with the steam, in which case search appropriate subclasses in this class.

29. **PRESSURE-GENERATORS, STEAM, AIR-INJECTED.** Devices for generating steam into which air is injected and mechanism therefor.

CLASS 60—Continued.

30. **PRESSURE - GENERATORS, STEAM, COMBUSTION-PRODUCTS INJECTED, EXPLOSION.** Devices for generating steam by injecting the products of an explosive compound into the generator.

31. **PRESSURE - GENERATORS, STEAM, COMBUSTION-PRODUCTS INJECTED, LIQUID AND GASEOUS FUEL.** Devices for generating steam where the combustion products of a liquid or gaseous fuel are injected into the generator to mingle with the vapor or water when the fuel is burned with a continuous flame.

Search Class—

60—MISCELLANEOUS HEAT-ENGINE PLANTS, subclass 30, Pressure-generators, Steam, Combustion-products injected, Explosion. For pressure-generators using liquid or gaseous fuel in the form of an explosive.

32. **PRESSURE - GENERATORS, STEAM, COMBUSTION-PRODUCTS INJECTED, SOLID FUEL.** Steam-generators into which the products of combustion of solid fuel are injected.

33. **PRESSURE - GENERATORS, STEAM, COMBUSTION-PRODUCTS INJECTED, FLASHER TYPE.** Steam-generators where the products of combustion are injected into the generator with the injection of a small quantity of water that immediately flashes into steam and mixes with the gases.

34. **PRESSURE-GENERATORS, LIQUID BATH.** Generators for liquid vapor that is generally of inflammable character, the liquid being placed in a compartment that is surrounded by another liquid.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, for generators of this type whose general construction adapts them for steam generation.

35. **PRESSURE-GENERATORS, AIR.** Devices for heating air or other gas to increase the pressure in order to increase the effectiveness for use as a motor fluid.

36. **PRESSURE - GENERATORS, AIR, COMBUSTION-PRODUCTS INJECTED.** Devices for increasing air-pressure by injecting the products of combustion into the air in the receptacle or conduit.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, appropriate subclasses.

37. **PRESSURE - GENERATORS, AIR, COMBUSTION-PRODUCTS INJECTED, EXPLOSION.** Devices for injecting the explosive products of combustion into the air to be heated.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, appropriate subclasses for analogous devices.

38. **PRESSURE - GENERATORS, AIR, MOISTURE-INJECTED.** Devices for heating and moistening air to increase the pressure.

39. **PRESSURE-GENERATORS, AIR, ELECTRIC HEATER.** Devices for heating air by an electric heater to increase pressure.

Search Class—

219—ELECTRIC HEATERS AND RHEOSTATS, generally.

40. **FLUID COMPOUNDS.** Compounds used in engines of this type for working fluids.

CLASS 63.—JEWELRY.

DEFINITIONS.

Class.

This class includes articles generally composed of precious metals and stones, or imitations of the same, which are intended to be worn upon the person as ornaments.

A few articles of an analogous nature, which are composed of other materials, have been included.

A group of safety attachments for preventing loss of watches has also been included.

Note.—Patents have been excluded in which the invention resides in attachments applied to ornamental articles as above defined, which attachments can be elsewhere classified.

Note.—Where the invention resides in an ornamental surface for an article of jewelry, the patent is placed in class 41, ORNAMENTATION, subclass 17, Surface type, and the subclasses thereunder.

Subclasses.

1. COMBINATION ARTICLES. Constructions in which are combined two or more articles having different functions, at least one of the articles falling within this class.

Search Classes—

63—JEWELRY, subclasses 22, Watch and chain attachments, Bars, and 23, Watch and chain attachments, Charms, since these subclasses are largely composed of articles of conventional form connected with a bar or charm, and patents of this character have not been included here.

206—SPECIAL RECEPTACLES AND PACKAGES, subclasses 37, Receptacles, Pocket and personal use, and 38, Receptacles, Pocket and personal use, Combination.

2. MISCELLANEOUS. Inventions falling within the definition of this class, but not within that of any subclass, or patents more closely related to this class than to any other.

3. BRACELETS. Ornaments for encircling the arm.

Note.—To complete a search in this subclass, the search-cards under the more specific subclasses of Bracelets should be studied, as most of them apply to some extent here.

Search Classes—

65—KITCHEN AND TABLE ARTICLES, subclass 29, Napkin-holders.

165—DESIGNS, JEWELRY, BRACELETS.

4. BRACELETS, CHAIN. Bracelets composed of a series of links or units, which are joined together by non-expanding connections, an attaching means being employed for uniting the ends of the chain.

Search Classes—

59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclasses 80, Chains, Ornamental; 82, Chains, Ornamental, Links, and 81, Chains, Ornamental, Multistrand roller, for various types of ornamental chains.

241—GARMENT-SUPPORTERS, subclass 8, Waist-line body-garments, Belts.

5. BRACELETS, EXPANSIBLE. Bracelets which are endless and may be expanded to slip over the hands.

Search Classes—

59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 79, Chains, Elastic.

241—GARMENT-SUPPORTERS, subclasses 5, Limb-encircling, and 8, Waist-line body-garments, Belts.

6. BRACELETS, EXPANSIBLE, TWO-PART. Expansible bracelets composed of two sections only.

7. BRACELETS, SINGLE HINGE. Bracelets formed with two sections hinged at one point.

Note.—When the invention is in the hinge structure *per se* the patent is placed in this subclass.

Note.—Bracelet fasteners, when there is no combination between the bracelets and the fastener, are found in class 24, BUCKLES, BUTTONS, CLASPS, ETC., and nearly all such fasteners occur in subclass 230, Separable fasteners, Lateral sliding. Search should be made in this subclass for bracelets having abutting ends.

Search Classes—

16—BUILDERS' HARDWARE, subclass 105, Hinges, Concealed.

70—LOCKS AND LATCHES, subclass 24, Shackles.

8. BRACELETS, SINGLE-HINGE, SPRING. Bracelets having spring means which operates to hold the sections in desired position or positions.

Search Class—

16—BUILDERS' HARDWARE, subclass 25, Hinges, Spring.

9. BRACELETS, MULTIPLE-HINGE. Bracelets hinged at a plurality of points.

10. BRACELETS, SWIVELED. Bracelets the sections of which are connected by one or more swivel joints.

CLASS 63—Continued.

11. BRACELETS, RESILIENT. Bracelets constructed without pivot or hinge joints, but composed of material with sufficient spring to permit the bracelets to open for the insertion of the hand.

Search Class—

63—JEWELRY, subclass 16, Finger-rings, Adjustable and divided.

12. EAR-RINGS. Ornaments to be attached to the ear.

Search Classes—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 155, Pin-fasteners, Loss-preventing devices, which contains ear-rings in which the invention resides in means for preventing withdrawal of the ear-ring from the ear.

165—DESIGNS, JEWELRY, EAR-RINGS.

13. EAR-RINGS, PENDENT-JEWEL. Ear-rings having ornaments suspended and free to swing.

Search Class—

63—JEWELRY, subclass 14, Ear-rings, Non-piercing.

14. EAR-RINGS, NON-PIERCING. Ear-rings in which the attaching member is clamped or secured upon the lobe of the ear without piercing the same.

15. FINGER-RINGS. Ornamental rings for the fingers.

Search Classes—

63—Jewelry, in the various subclasses of Gem-Settings, especially subclass 29, Gem-settings, Detachable, where many rings having interchangeable initial-mountings are found.

165—DESIGNS, JEWELRY, FINGER AND SCARF RINGS.

16. FINGER-RINGS, ADJUSTABLE AND DIVIDED. Rings which may be varied in size or may be expanded or opened. Note.—Similar structures may be found in the various subclasses of bracelets.

17. FINGER-RINGS, GUARDS. Attachments for preventing the loss of the ring.

18. LOCKETS. Ornaments having a concealed recess adapted to receive a picture and so constructed that the picture may be disclosed.

Search Classes—

40—CARD, PICTURE, AND SIGN EXHIBITING subclasses 10, Checks, labels, and tags, Holders 1.5, Badges, and 1.6, Badges, Changeable reading, for somewhat similar devices, but which are intended for displaying information rather than for ornaments.

165—DESIGNS, JEWELRY, LOCKETS.

19. LOCKETS, HINGED COVERS. Lockets having the recess concealed by a cover opening at an angle to the plane of its seat.

Search Classes—

40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 156, Picture-frames, Card or picture retainers.

58—HOROLOGY, subclasses 88, Watches, Cases, and 103, Watches, Cases, Hinges.

20. ORNAMENTAL PINS. Ornaments which are intended to be secured to the clothing by means of a pin attachment.

Search Classes—

63—JEWELRY, subclass 31, Gem-settings, Movable, for pins having a vibrating jewel.

24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 6, Article-holders, Flower, Pin-attached; 13, Article-holders, Pin-attached; 103, Buttons and fasteners, Pin-attached; 150, Pin-fasteners; 155, Pin-fasteners, Loss-preventing devices; 156, Pin-fasteners, Guards, and the subclasses thereunder; 161, Pin-fasteners, Resilient, and 162, Pin-fasteners, Sliding.

40—CARD, PICTURE, AND SIGN EXHIBITING, subclasses 1.5, Badges, and 1.6, Badges, Changeable reading.

41—ORNAMENTATION, subclass 10, Ornamental forms.

165—DESIGNS, subclasses Jewelry, Brooches and pins.

21. WATCH AND CHAIN ATTACHMENTS. Ornamental and safety attachments for watches and for ornamental chains not elsewhere classifiable.

Note.—Chain structure *per se* is found in class 59, CHAIN, STAPLE, AND HORSESHOE MAKING.

Search Class—

165—DESIGNS, JEWELRY, ORNAMENTAL CHAINS, AND WATCH-CHAIN ATTACHMENTS.

22. WATCH AND CHAIN ATTACHMENTS, BARS. Attachments for chains to be passed through a buttonhole to secure the chain to the clothing.

23. WATCH AND CHAIN ATTACHMENTS, CHARMS. Pendent ornaments, such as are usually attached to a watch-chain.

Note.—If the article carries a concealed picture, it should be classified under subclass 18, Lockets, or subclass 19, Lockets, Hinged.

CLASS 63—Continued.

Note.—If the article is of inferior material and its main function is to display certain information, it should be classified under class 40, CARB, PICTURE, AND SIGN EXHIBITING, subclasses 1.5, Badges, and 1.6, Badges, Changeable reading.

24. WATCH AND CHAIN ATTACHMENTS, SAFETY WATCH-GUARDS. Attachments designed to prevent the loss of the watch from the pocket.

Note.—If the device is not detached from the pocket upon the withdrawal of the watch, the patent should be placed in class 2, APPAREL, subclass 153, Pockets, Safety attachments, Watch.

Search Classes—

- 120—STATIONERY, subclass 84, Pencils, Attachments.
150—CLOTH, LEATHER, AND RUBBER RECEPTACLES, subclass 47, Portemonnaies and Pocketbooks, Safety attachments.

25. WATCH AND CHAIN ATTACHMENTS, SAFETY WATCH-GUARDS, AUTOMATICALLY-OPERATED. Safety watch-guards carrying means which is automatically thrown to engaging position by a pull on the chain.

Search Classes—

- 43—FISHING AND TRAPPING, subclass 6, Fishing, Harpoons and spears.
114—SHIPS, subclass 208, Anchors, Fluke-pivoted.
132—TOILET, subclasses 22, Hair-fasteners, and 25, Hat-fasteners.
189—METALLIC BUILDING STRUCTURES, subclass 92, Land-anchors, Expanding.

26. GEM-SETTINGS. Means carried by articles of jewelry for holding gems.

Search Classes—

- 24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 113, Buttons and fasteners, Loss-preventing devices.

CLASS 63—Continued.

- 29—METAL-WORKING, subclass 10, Special work, Gem and jewel setting.

- 165—DESIGNS, subclass Jewelry, Miscellaneous.

27. GEM-SETTINGS, CROWN. Open settings which hold the gem by means of a circular series of prongs.

Search Class—

- 63—JEWELRY, the various subclasses of Ear-rings.

28. GEM-SETTINGS, MULTIPLE. Settings for holding a plurality of gems closely assembled, such as cluster-settings and jewel bars.

29. GEM-SETTINGS, DETACHABLE. Gem-settings in which the gem or the gem and its holder may be detached from the article in order that another mounting may be substituted.

Search Classes—

- 63—JEWELRY, subclass 23, Watch and chain attachments, Charms.

- 24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 113, Buttons and fasteners, Covers.

30. GEM-SETTINGS, DETACHABLE, EXHIBITING. Devices for temporarily holding a gem for display purposes.

31. GEM-SETTINGS, MOVABLE. Gem-settings which are mounted on a spring, so that it may vibrate or is so connected with mechanism that a positive motion may be imparted to it.

Search Class—

- 63—JEWELRY, subclass 13, Ear-rings, Pendant-jewel, for suspended gems.

32. GEMS. Limited to the stones or gems *per se*.

CLASS 67.—ILLUMINATING BURNERS.

DEFINITIONS.

Class.

This class is limited to the production of light for illumination by combustion.

This class relates to burners and certain of their accessories that are designed to use gaseous, liquid, or solid fuel and that are primarily employed in the production of light. It is intended to include only the burner and such accessories as are so intimately associated with the burner as to be indivisible or are of use only with illuminating burners.

This class in part parallels class 158, LIQUID AND GASEOUS FUEL BURNERS. When a device is capable of use in both these arts and when there is a specific subclass in one art, but not in the other, the device will be classified in the specific subclass.

Systems for feeding liquid fuel to illuminating burners capable of general application are classified in class 158, LIQUID AND GASEOUS FUEL BURNERS, subclass 36, Burners, Liquid fuel, Fuel feeding, and the subclasses thereunder.

Class 240, ILLUMINATION, is superior to class 67. Class 240 includes lanterns, casings, and other devices for protecting the flame, electric light, or other source of light or for distributing the light from such light sources, those systems for distributing light, generally daylight, through buildings being classified in class 88, OPTICS, subclass 57.5, Building lights.

When the casings in class 240, ILLUMINATION, are used with burners, they necessarily include means admitting the air for combustion and for the escape of the products of combustion. The combination of a burner and a lantern casing or other protector will be classified in class 240. In such cases the burner should be divided out or cross-referenced into class 67.

The combination of an illuminating burner and a carbureter is classified in class 48, GAS, HEATING AND ILLUMINATING, subclasses 161, Carbureters, Lamps, or 162, Carbureters, Lamps, Gravity.

Devices for the distribution of gaseous fuel are classified in classes 48, GAS, HEATING AND ILLUMINATING, or 137, WATER DISTRIBUTION.

The line between the solid fuel subclasses in this class and the subclasses under Pyrotechnics in class 102, AMMUNITION AND EXPLOSIVE DEVICES, is that the devices in class 67, ILLUMINATING BURNERS, are primarily employed to produce light for illumination, while those in class 102 are primarily employed to produce light for display, amusement, or spectacular effects. The devices in class 67 are permanent burners designed to be recharged with fuel and used repeatedly, while the devices in class 102, subclass 20, Pyrotechnics, and the subclasses thereunder, are in general not intended for repeated use. Therefore cartridges or receptacles of flash powder that are not designed to be refilled are classified in class 102, although they may be for the purpose of illuminating.

Subclasses.

1. MISCELLANEOUS. Miscellaneous devices for producing light by combustion.

2. COMBINED GAS AND VAPOR. Burners which are designed for use with liquid vapor fuel or gaseous fuel at will.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 11, Combined oil and gaseous fuel.

3. IGNITING DEVICES. Miscellaneous devices for producing or maintaining a flame by combustion, the resulting flame being used as an igniter for illuminating burners rather than as an illuminator itself.

Note.—Electric igniters are classified in class 219, ELECTRIC HEATING AND RHEOSTATS, subclass 32, Heaters, Tools and Instruments, Burning, Igniters, or in class 175, ELECTRICITY, GENERAL APPLICATIONS, subclasses under Igniting devices.

4. IGNITING DEVICES, CIGAR. Stands or pendants capable of producing or maintaining a flame by combustion for the purpose of lighting a cigar or for similar use.

Note.—Electric cigar igniters are classified in class 219, ELECTRIC HEATING AND RHEOSTATS, subclass 32, Heaters, Tools and Instruments, Burning, Igniters, or in class 175, ELECTRICITY, GENERAL APPLICATIONS, subclass 296, Igniting devices, Cigar. The combination of cigar igniters with other devices, such as cigar tip cutters, are classified in class 131, TOBACCO, subclasses 38, Cigar cutters, Tip, and 59, Tobacco users' appliances.

5. IGNITING DEVICES, HYDROGEN-PLATINUM. "Döbereiner's Light." Limited to the combination of an automatic hydrogen or equivalent gas generator with a catalytic body which is raised to incandescence by the gas, thus igniting it.

Search Classes—

67—ILLUMINATING BURNERS, subclasses 7, Igniting devices, Pocket; 8, Igniting devices, Pocket Attached lamp; 9, Igniting devices, Lamp, and 19, Igniting devices, Gaseous, Self-igniting, Catalytic, for catalytic features.

48—GAS, HEATING AND ILLUMINATING, subclass 114, Generators, Hydrogen, for generator features.

CLASS 67—Continued.

6. IGNITING DEVICES, IMPLEMENTS. Separate implements specially adapted for igniting gas or oil lamps or the like. The implement may consist of a device carrying a flame or equipped with mechanism for producing a flame or a combination of an igniter with a gas key or wick operator. The line between these implements and the gaseous and lamp igniting devices in this class is that the former are separate and independent and are designed to be carried from lamp to lamp, while the latter are an integral part of the lamp or burner structure.

7. IGNITING DEVICES, POCKET. Devices or receptacles (other than ordinary match safes) for the pocket or personal use which are capable of producing flame by combustion for a short while. The igniting means is generally fulminating or catalytic.

Note.—Receptacles, using a plurality of ordinary matches are classified in class 206, SPECIAL RECEPTACLES AND PACKAGES, subclass 20, Receptacles, Match safes, and the subclasses thereunder.

Search Class—

67—ILLUMINATING BURNERS, subclasses 4, Igniting devices, Cigar; 10, Igniting devices, Lamp, Fulminating; 12, Igniting devices, Lamp, Match scratchers; 19, Igniting devices, Gaseous, Self-igniting, Catalytic; 20, Igniting devices, Gaseous, Self-igniting, Fulminating, and 33, Solid fuel, Flash lights, Fulminant ignition, for the form of igniting devices.

8. IGNITING DEVICES, POCKET, ATTACHED LAMP. Igniting devices to be carried in the pocket or for personal wear which include in addition to the igniter a small lamp or candle, so that the light may be maintained for a considerable time.

Search Class—

67—ILLUMINATING BURNERS, subclasses 10, Igniting devices, Lamp, Fulminating, and 12, Igniting devices, Lamp, Match scratchers.

9. IGNITING DEVICES, LAMP. Liquid fuel illuminating lamp igniting devices of a miscellaneous nature other than electrical which are integral with or permanently attached to the lamp.

Note.—Electrical igniting devices for oil lamps are classified in class 175, ELECTRICITY, GENERAL APPLICATIONS, subclasses under Igniting devices, or in class 219, ELECTRIC HEATING AND RHEOSTATS, subclass 32, Heaters, Tools and Instruments, Burning, Igniters.

10. IGNITING DEVICES, LAMP, FULMINATING. Liquid fuel illuminating lamp igniting devices which are integral with the lamp structure and which derive their igniting flame from fulminating material, said material forming part of the device. These devices are generally capable of repeated operation.

Search Classes—

67—ILLUMINATING BURNERS, subclasses 4, Igniting devices, Cigar; 7, Igniting devices, Pocket; 8, Igniting devices, Pocket, Attached lamp; 20, Igniting devices, Gaseous, Self-igniting, Fulminating, and 33, Solid fuel, Flash lights, Fulminant ignition.

102—AMMUNITION AND EXPLOSIVE DEVICES, subclasses 21, Pyrotechnics, Cartridges; 24, Pyrotechnics, Torches, and 39, Projectiles, Shells, Fuses, Percussion.

161—TIME CONTROLLING MECHANISM, subclasses 11, Lighting mechanism, and 14, Lighting mechanism, Friction.

206—SPECIAL RECEPTACLES AND PACKAGES, subclasses 32, Receptacles, Match safes, Withdrawal igniting, and 34, Receptacles, Match safes, Pocket, Withdrawal igniting.

11. IGNITING DEVICES, LAMP, APERTURE. Liquid fuel illuminating lamp structures that are provided with an aperture and a movable closure therefor to permit the introduction of igniting means.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 90, Burners, Liquid fuel, Perforated combustion tube, Lighting arrangements.

12. IGNITING DEVICES, LAMP, MATCH SCRATCHERS. Liquid fuel illuminating lamp igniting devices in which an ordinary match held directly in the hand is inserted into the lamp and manually or automatically forced against a match scratcher.

Search Class—

206—SPECIAL RECEPTACLES AND PACKAGES, subclasses 32, Receptacles, Match safes, Withdrawal igniting, and 34, Receptacles, Match safes, Pocket, Withdrawal igniting.

13. IGNITING DEVICES, LAMP, SEPARABLE. Liquid fuel illuminating burners wherein the gallery can be moved away from the rest of the burner to give access to the wick for lighting, trimming, etc.

CLASS 67—Continued.

14. **IGNITING DEVICES, GASEOUS.** Miscellaneous devices for igniting illuminating gas burners in which the igniting temperature is derived from combustion.

Note.—Does not include electric igniters, for which see class 219, **ELECTRIC HEATING AND RHEOSTATS**, subclass 32, Heaters, Tools and instruments, Burning, Igniters, and class 175, **ELECTRICITY, GENERAL APPLICATIONS**, subclasses under Igniting devices.

15. **IGNITING DEVICES, GASEOUS, CONDUCTING TUBE.** Devices in which the igniting flame is conveyed to inaccessible illuminating gas burners by means of a tube which contains gas. This tube is generally perforated or slotted.

Search Classes—

126—**STOVES AND FURNACES**, subclass 39, Stoves, Cooking, Liquid or gaseous fuel, Gas.

158—**LIQUID AND GASEOUS FUEL BURNERS**, subclass 115, Burners, Gas, Lighting devices.

16. **IGNITING DEVICES, GASEOUS, PILOT.** Devices in which a small igniting or pilot flame is maintained when the main flame is extinguished. The pilot may or may not be extinguished when the main flame is lighted. Includes single flame burners in which total extinguishment of the flame is prevented, as by a stop on the control valve.

Search Classes—

67—**ILLUMINATING BURNERS**, subclasses 19, Igniting devices, Gaseous, Self-igniting, Catalytic; 89, Gaseous fuel burners, Incandescent, Calcium light type; 110, Gaseous fuel burners, Intermittent, and 111, Gaseous fuel burners, Intermittent, Self-operated.

126—**STOVES AND FURNACES**, subclasses 52, Stoves, Cooking, Liquid or gaseous fuel, Valve mechanism, Article controlled; 234, Tool heaters, Liquid or gaseous fuel, Gas burner attachments, Tool controlled valve, and 235, Tool heaters, Soldering iron, Gas heaters, Tool controlled valve.

158—**LIQUID AND GASEOUS FUEL BURNERS**, subclass 115, Burners, Gas, Lighting devices.

17. **IGNITING DEVICES, GASEOUS, PILOT, PRESSURE OPERATED, MULTIPLE FLUID.** Gas igniting and extinguishing devices of the pilot type in which the control valve is operated by auxiliary fluid pressure. One of the two operations for opening or closing the gas valve may be manual and the other effected by the pressure.

Search Classes—

67—**ILLUMINATING BURNERS**, subclass 19, Lighting devices, Gaseous, Self-igniting, Catalytic.

95—**PHOTOGRAPHY**, subclass 54, Cameras, Shutters, Fluid operating mechanisms.

18. **IGNITING DEVICES, GASEOUS, PILOT, PRESSURE OPERATED, SINGLE FLUID.** Gas igniting and extinguishing devices of the pilot type in which the control valve is operated by variations in the gas pressure, the pressure variations being produced at will. One of the two operations for opening and closing the gas valve may be manual and the other effected by the pressure.

Search Class—

67—**ILLUMINATING BURNERS**, subclasses 19, Igniting devices, Gaseous, Self-igniting, Catalytic, and 119, Gaseous fuel burners, Regulating, Automatic.

19. **IGNITING DEVICES, GASEOUS, SELF-IGNITING, CATALYTIC.** Devices specifically adapted to ignite illuminating gas burners and which derive their igniting flame from catalytic material brought into contact with the flow of gas, which may be the main or an auxiliary supply.

Search Class—

67—**ILLUMINATING BURNERS**, subclasses 5, Igniting devices, Hydrogen-platinum; 7, Igniting devices, Pocket, and 8, Igniting devices, Pocket, Attached lamp.

20. **IGNITING DEVICES, GASEOUS, SELF-IGNITING, FULMINATING.** Devices specifically adapted to ignite illuminating gas burners and which derive their igniting flame from fulminating material contained within the device.

Search Classes—

67—**ILLUMINATING BURNERS**, subclasses 4, Igniting devices, Cigar; 7, Igniting devices, Pocket; 8, Igniting devices, Pocket, Attached lamp; 10, Igniting devices, Lamp, Fulminating, and 33, Solid fuel, Flash lights, Fulminant ignition.

102—**AMMUNITION AND EXPLOSIVE DEVICES**, subclasses 21, Pyrotechnics, Cartridges; 24, Pyrotechnics, Torches, and 39, Projectiles, Shells, Fuses, Percussion.

161—**TIME CONTROLLING MECHANISM**, subclasses 11, Lighting mechanism, and 14, Lighting mechanism, Friction.

206—**SPECIAL RECEPTACLES AND PACKAGES**, subclasses 32, Receptacles, Match safes, Withdrawal igniting, and 34, Receptacles, Match safes, Pocket, Withdrawal igniting.

21. **SOLID FUEL.** Miscellaneous illuminating devices whose fuel is a solid, such as candle stock, solid lard or grease, etc.

22. **SOLID FUEL, CANDLES.** Limited to the physical structure of illuminating candles.

Note.—The chemical composition of the candle is classified in class 87, **OILS, FATS, AND GLUE**, subclass 21, Candles.

Search Class—

167—**MEDICINES**, subclass 12, Disinfectants, Candles and holders.

23. **SOLID FUEL, CANDLESTICKS.** Devices for supporting the ordinary illuminating candle that are not provided with means, such as globes or lantern cases, for protecting the candle flame.

Note.—Protected candle holders are classified in class 240, **ILLUMINATION**, subclass 13, Lanterns, Candle type.

CLASS 67—Continued.

Search Class—

167—**MEDICINES**, subclass 12, Disinfectants, Candles and holders.

24. **SOLID FUEL, CANDLESTICKS, EXTINGUISHERS.** Mechanical devices for automatically extinguishing the flame of the ordinary illuminating candle when a predetermined portion of the candle has been consumed. This subclass also includes manual extinguishers.

Search Class—

67—**ILLUMINATING BURNERS**, subclass 73, Liquid fuel, Burners, Extinguishers, and the subclasses thereunder.

25. **SOLID FUEL, CANDLESTICKS, CANDELABRA.** Candle holders designed to support a plurality of candles. These devices are generally adjustable or collapsible.

26. **SOLID FUEL, CANDLESTICKS, MINERS'.** Candlesticks which are specially adapted to be attached to the walls or timbering of mines. They are generally provided with a sharp prong or prongs for this purpose.

Search Classes—

7—**COMPOUND TOOLS**, subclass 10, Type, Miner's candlestick.

240—**ILLUMINATION**, subclass 56, Light supports, Christmas tree.

27. **SOLID FUEL, CANDLESTICKS, MAINTAINED FLAME LEVEL.** Candle supports so constructed that the candle flame is maintained in the same horizontal plane despite the shortening of the candle due to burning.

Search Classes—

112—**SEWING MACHINES**, subclass 28, Wax thread.

184—**LUBRICATION**, subclasses under Lubricators, Force feed, Followers.

240—**ILLUMINATION.**

28. **SOLID FUEL, FLASH LIGHTS.** Devices for igniting a charge of combustible powder for producing an illuminating flash, generally for taking photographs. Does not include simple cartridges or receptacles containing powder which are ignited manually or with a fuse, such devices being classified in class 102, **AMMUNITION AND EXPLOSIVE DEVICES**, subclass 20, Pyrotechnics. Does not include pyrotechnical devices.

Note.—Flash light subclasses are limited to machines for igniting and for retaining the smoke from charges of highly inflammable non-explosive powders for giving instantaneous flashes of light. The machine is generally charged with the loose powder, although it may be supplied with cartridges specially adapted for the device.

29. **SOLID FUEL, FLASH LIGHTS, SHUTTER RELEASE AND LIGHT.** Devices for simultaneously operating the shutter of a camera and igniting a charge of flash light powder.

30. **SOLID FUEL, FLASH LIGHTS, HOODS.** Casings surrounding flash lights for the purpose of retaining the smoke or fumes from the burning powder.

31. **SOLID FUEL, FLASH LIGHTS, ELECTRIC IGNITION.** Machines for igniting flash light powder charges in which the ignition is effected by means of an electric current, generally by means of a hot wire or a spark.

Search Classes—

102—**AMMUNITION AND EXPLOSIVE DEVICES**, subclass 38, Projectiles, Shells, Fuses, Electric.

175—**ELECTRICITY, GENERAL APPLICATIONS**, subclasses under igniting devices.

219—**ELECTRIC HEATING, AND RHEOSTATS**, subclass 32, Heaters, Tools and instruments, Burning, Igniters, for electric features.

32. **SOLID FUEL, FLASH LIGHTS, FLAME IGNITION.** Machines for igniting flash light powder charges in which the powder and a constantly burning flame or a constantly heated body which are normally out of contact are brought together to effect ignition.

33. **SOLID FUEL, FLASH LIGHTS, FULMINANT IGNITION.** Machines for igniting flash-light powder charges in which the ignition is effected by the detonation of a fulminating body, such as a percussion cap or a match.

Search Classes—

67—**ILLUMINATING BURNERS**, subclasses 4, Igniting devices, Cigar; 7, Igniting devices, Pocket; 8, Igniting devices, Pocket, Attached lamp; 10, Igniting devices, Lamp, Fulminating, and 20, Igniting devices, Gaseous, Self-igniting, Fulminating.

102—**AMMUNITION AND EXPLOSIVE DEVICES**, subclasses 21, Pyrotechnics, Cartridges; 24, Pyrotechnics, Torches, and 39, Projectiles, Shells, Fuses, Percussion.

34. **SOLID FUEL, MAGNESIUM STRIP TYPE.** Illuminating devices which utilize strips or wires of magnesium or similar highly combustible metals as fuel.

35. **LIQUID FUEL.** Miscellaneous devices for producing light from liquid fuel.

36. **LIQUID FUEL, BURNERS.** Miscellaneous liquid fuel burners for producing light.

37. **LIQUID FUEL, BURNERS, VAPOR.** Liquid fuel illuminating burners in which there is a distinct zone of vaporization between the liquid fuel and the flame.

38. **LIQUID FUEL, BURNERS, VAPOR, BLUE FLAME WICK TYPE.** Liquid fuel illuminating burners of the wick type which are designed to give a blue or heating flame, which flame is used to incandesce a mantle or other refractory body.

CLASS 67—Continued.

Search Classes—

- 67—ILLUMINATING BURNERS, subclass 56, Liquid fuel, Burners, Wick type, Argand, and the subclasses thereunder.
- 158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 88, Burners, Liquid fuel, Perforated combustion tube, Wick, and 94, Burners, Liquid fuel, Lamp type.
39. LIQUID FUEL, BURNERS, VAPOR, MULTIPLE FLUID. Illuminating liquid fuel burners of the vapor type in which one or more auxiliary fluids are used. These auxiliary fluids are generally used to spray or atomize the liquid fuel. The auxiliary fluid is generally steam or air, but may be liquid or gaseous fuel.
- Search Class—
158—LIQUID AND GASEOUS FUEL BURNERS, appropriate subclasses.
40. LIQUID FUEL, BURNERS, VAPOR, RETORT. Liquid fuel illuminating burners in which the fuel is vaporized in a well defined closed chamber or retort. In no case does the flame come in direct contact with the fuel while the latter is in the liquid state. Most of the retort burners with the air mixing features are used to incandescence mantles.
- Search Class—
158—LIQUID AND GASEOUS FUEL BURNERS under retorts for Retort structure.
41. LIQUID FUEL, BURNERS, VAPOR, RETORT, STARTERS. Liquid fuel illuminating burners of the retort type that are provided with means other than the usual starting cup for preheating the retort for starting. Also devices or implements specially adapted to start the retort burner.
- Search Class—
158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 61, Burners, Liquid fuel, Retort, Auxiliary heater; 62, Burners, Liquid fuel, Retort, Auxiliary heater, Subburner, and 81, Burners, Liquid fuel, Retort starters, and the subclasses thereunder.
42. LIQUID FUEL, BURNERS, VAPOR, RETORT, HEATING JET. Liquid fuel illuminating burners of the retort type in which the retort is heated by an auxiliary flame.
- Search Class—
158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 58, Burners, Liquid fuel, Retort, Additional carbureter, and 59, Burners, Liquid fuel, Retort, Additional carbureter, Central generator.
43. LIQUID FUEL, BURNERS, VAPOR, RETORT, HEATING, JET, AIR MIXING. Liquid fuel illuminating burners of the air mixing retort type in which the retort is heated by an auxiliary flame, the fuel therefor being derived from the mixture of vapor and air of the main or illuminating flame.
- Search Class—
158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 58, Burners, Liquid fuel, Retort, Additional carbureter, and 59, Burners, Liquid fuel, Retort, Additional carbureter, Central generator.
44. LIQUID FUEL, BURNERS, VAPOR, RETORT, HEAT CONDUCTING. Liquid fuel illuminating burners of the retort type in which the retort is not heated directly, but derives its heat through conduction. The retort generally underlies the flame.
- Search Class—
158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 32, Burners, Liquid fuel, Blast lamp; 35, Burners, Liquid fuel, Blast lamp, Hand torches, Wick type; 66, Burners, Liquid fuel, Retort, Underlying, and the subclasses thereunder, and 72, Burners, Liquid fuel, Retort, Wick feed.
45. LIQUID FUEL, BURNERS, VAPOR, RETORT, HEAT CONDUCTING, AIR MIXING. Liquid fuel illuminating burners of the retort type in which the retort is not heated directly, but derives its heat through conduction from the flame, and in which the vapor is mixed with air before reaching the point of combustion. The retort generally underlies the flame.
- Search Class—
158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 32, Burners, Liquid fuel, Blast lamp, and the subclasses thereunder; 66, Burners, Liquid fuel, Retort, Underlying, and the subclasses thereunder, and 72, Burners, Liquid fuel, Retort, Wick feed.
46. LIQUID FUEL, BURNERS, VAPOR, RETORT, AIR MIXING. Liquid fuel illuminating burners of the retort type in which the vapor is mixed with air before it reaches the flame. This is generally accomplished in a Bunsen tube.
- Search Class—
158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 64, Burners, Liquid fuel, Retort, Overlying, Mixing chamber; 65, Burners, Liquid fuel, Retort, Overlying, Mixing chamber, Burner cap; 68, Burners, Liquid fuel, Retort, Underlying, Conducting plate, Mixing chamber and burner cap; 69, Burners, Liquid fuel, Retort, Underlying, Mixing chamber and burner cap, and 70, Burners, Liquid fuel, Retort, Underlying, Mixing chamber and flame deflector.
47. LIQUID FUEL, BURNERS, VAPOR, RETORT, AIR MIXING, INTERNAL. Liquid fuel illuminating burners of the air mixing retort type in which the retort is immersed in the flame. When the burner is equipped with a mantle, then the retort is inside the mantle.

CLASS 67—Continued.

48. LIQUID FUEL, BURNERS, VAPOR, RETORT, AIR MIXING, OVERLYING. Liquid fuel illuminating burners of the air mixing retort type in which the retort is located above the flame.

Search Class—

- 158—LIQUID AND GASEOUS FUEL BURNERS, subclass 63, Burners, Liquid fuel, Retort, Overlying, and the subclasses thereunder.
49. LIQUID FUEL, BURNERS, VAPOR, RETORT, AIR MIXING, SIDE. Liquid fuel illuminating burners of the air mixing retort type in which the retort is located at one side of the flame.
- Search Class—
158—LIQUID AND GASEOUS FUEL BURNERS, subclass 71, Burners, Liquid fuel, Retort, Side retort.
50. LIQUID FUEL, BURNERS, VAPOR, RETORT, AIR MIXING, INVERTED. Liquid fuel illuminating burners of the retort air mixing type in which the burner is inverted—i.e., the combustion occurs below the burner tip. The burner is generally equipped with an inverted mantle.
51. LIQUID FUEL, BURNERS, FLOATING. Liquid fuel illuminating burners in which the burner floats upon the surface of the fuel.
- Search Class—
67—ILLUMINATING BURNERS, subclass 21, Solid fuel.
52. LIQUID FUEL, BURNERS, FORCED DRAFT. Liquid fuel illuminating burners in which the draft is augmented by artificial means. Does not include the ordinary chimney or globe.
- Search Classes—
67—ILLUMINATING BURNERS, subclasses 90, Gaseous fuel burners, Incandescent, Pressure; 91, Gaseous fuel burners, Incandescent, Pressure, Self-intensifying; 107, Gaseous fuel burners, Multiple fluid, and 108, Gaseous fuel burners, Regenerative.
- 158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 11, Combined oil and gaseous fuel, and 45, Burners, Liquid fuel, Fuel feeding, Lamp stove type, Reservoir, Protector, and air feeding.
53. LIQUID FUEL, BURNERS, WICK TYPE. Miscellaneous illuminating burners designed to burn liquid fuel from a wick and not classifiable in any of the subclasses hereunder.
54. LIQUID FUEL, BURNERS, WICK TYPE, MULTIPLE. Liquid fuel illuminating burners of the wick type where the invention resides in providing the burner with a plurality of independent burning wicks.
55. LIQUID FUEL, BURNERS, WICK TYPE, CHIMNEY-LESS. Liquid fuel illuminating lamps of the wick type that are designed to burn without a protecting chimney or globe. Includes the miners' lamps, flambeaux, and torches using wicks.
- Search Class—
221—DISPENSING CANS, subclass 55, Hand-oilers, Illuminating.
56. LIQUID FUEL, BURNERS, WICK TYPE, ARGAND. Liquid fuel illuminating burners having a wick annular in cross-section, air for combustion being fed to the flame through the central opening formed by the annular wick. The wick is not necessarily a true circle in section.
- Search Classes—
67—ILLUMINATING BURNERS, subclass 38, Liquid fuel, Burners, Vapor, Blue flame wick type.
- 158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 88, Burners, Liquid fuel, Perforated combustion tube, Wick, and 94, Burners, Liquid fuel, Lamp type.
57. LIQUID FUEL, BURNERS, WICK TYPE, ARGAND, LATERAL AIR INLET. Liquid fuel illuminating burners of the Argand type in which the air is admitted to the inner wick tube through a lateral passage or passages passing through the wick tubes above the font.
- Search Classes—
67—ILLUMINATING BURNERS, subclasses 38, Liquid fuel, Burners, Vapor, Blue flame wick type; 58, Liquid fuel, Burners, Wick type, Argand, Central draft, and the subclasses thereunder.
- 158—LIQUID AND GASEOUS FUEL BURNERS, subclass 94, Burners, Liquid fuel, Lamp type.
58. LIQUID FUEL, BURNERS, WICK TYPE, ARGAND, CENTRAL DRAFT. Liquid fuel illuminating burners of the Argand type in which the inner wick tube passes entirely through the font and draws its air supply from beneath through the font. Includes wick raisers specially adapted to central draft burners that do not fall in the subclasses hereunder.
- Search Classes—
67—ILLUMINATING BURNERS, subclass 38, Liquid fuel, Burners, Vapor, Blue flame wick type.
- 158—LIQUID AND GASEOUS FUEL BURNERS, subclass 94, Burners, Liquid fuel, Lamp type.
59. LIQUID FUEL, BURNERS, WICK TYPE, ARGAND, CENTRAL DRAFT, DRAW BAR. Liquid fuel illuminating burners of the Argand central draft type in which the wick is operated by a bar projecting from the font and reciprocated directly by hand.

CLASS 67—Continued.

Search Class—

- 67—ILLUMINATING BURNERS, subclasses 60, Liquid fuel, Burners, Wick type, Argand, Central draft, Rack bar, and 61, Liquid fuel, Burners, Wick type, Argand, Central draft, Screw rod.
60. LIQUID FUEL, BURNERS, WICK TYPE, ARGAND, CENTRAL DRAFT, RACK BAR. Liquid fuel illuminating burners of the Argand central draft type in which the wick is operated by a bar on which is formed a rack which engages a hand operated pinion.
61. LIQUID FUEL, BURNERS, WICK TYPE, ARGAND, CENTRAL DRAFT, SCREW ROD. Liquid fuel illuminating burners of the Argand central draft type in which the wick is operated by a screw-threaded rod or bar, said rod being rotatable or engaging a rotatable finger piece.
62. LIQUID FUEL, BURNERS, WICK TYPE, ARGAND, CENTRAL DRAFT, SWISS SCREW. Liquid fuel illuminating burners of the Argand central draft type in which the wick is operated by a screw formed on one of the wick tubes or on a sleeve concentric with said tubes.
63. LIQUID FUEL, BURNERS, WICK TYPE, ARGAND, AIR DISTRIBUTERS. Devices placed at the top of the inner wick tube of liquid fuel illuminating burners of the Argand type for regulating and directing the air fed through the inner wick tube.

Search Classes—

- 67—ILLUMINATING BURNERS, subclasses 38, Liquid fuel, Burners, Vapor, Blue flame wick type, and 56, Liquid fuel, Burners, Wick type, Argand, and the subclasses thereunder.
- 158—LIQUID AND GASEOUS FUEL BURNERS, subclass 94, Burners, Liquid fuel, Lamp type.
64. LIQUID FUEL, BURNERS, WICK TYPE, RETURNED WICK. Liquid fuel illuminating burners in which the wick is passed up to the point of combustion and then returned to the font so that the flame occurs at a point intermediate of the ends of the wick. In some cases the wick is endless.

65. LIQUID FUEL, BURNERS, WICK TYPE, WICK RAISERS. Devices for adjusting the wick to position in the wick tube for regulating the flame. Does not include wick raisers which are specially adapted to the central draft Argand oil burners, which are classified in this class, subclass 56, Liquid fuel, Burners, Wick type, Argand, and the subclasses thereunder. Includes wick raisers for heating burners when they are not specific to class 158, LIQUID AND GASEOUS FUEL BURNERS.

Search Class—

- 67—ILLUMINATING BURNERS, subclass 56, Liquid fuel, Burners, Wick type, Argand, and the subclasses thereunder.
66. LIQUID FUEL, BURNERS, WICK TYPE, WICK STOPS. Devices for preventing the displacement of the wick as by shock, inadvertence, or malicious intent. Also includes devices which limit the movement of the wick, so that it can not be turned too high or too low. The device is either applied to the wick raiser or directly to the wick. Includes wick stops for heating burners when they are not specific to class 158, LIQUID AND GASEOUS FUEL BURNERS.
67. LIQUID FUEL, BURNERS, WICK TYPE, WICK INSERTERS. Implements for facilitating the insertion of wicks into the wick tube or to wick tubes that are so modified as to aid in the insertion of the wick. Includes wick inserters for heating burners when they are not specific to class 158, LIQUID AND GASEOUS FUEL BURNERS.
68. LIQUID FUEL, BURNERS, WICK TYPE, WICK TRIMMERS. Devices, generally implements, for trimming the wick of liquid fuel burners. They generally operate by scraping, cutting, or brushing. Includes candle trimmers. Includes wick trimmers for heating burners when they are not specific to class 158, LIQUID AND GASEOUS FUEL BURNERS.
69. LIQUID FUEL, BURNERS, WICK TYPE, WICKS. Devices for conveying liquid fuel from the source of supply to the point of combustion by capillary attraction.
Note.—Includes wicks for heating burners when they are not specific to class 158, LIQUID AND GASEOUS FUEL BURNERS.
- Search Class—
87. OILS, FAT, AND GLUE, subclass 21, Candles.
70. LIQUID FUEL, BURNERS, WICK TYPE, WICKS, MULTIPLE PIECE. Compound wicks having one end specially adapted to convey the fuel and the other end specially adapted to withstand the effects of the combustion.
Note.—Includes wicks of this type for heating burners when they are not specific to class 158, LIQUID AND GASEOUS FUEL BURNERS.
71. LIQUID FUEL, BURNERS, WICK TYPE, GLASS CONE. Liquid fuel illuminating burners of the wick type in which the cone is of glass or similar transparent or translucent material, the object being to eliminate the shadow cast by the cone and to utilize the entire flame for illuminating.
72. LIQUID FUEL, BURNERS, WICK TYPE, AIR DISTRIBUTERS. Liquid fuel illuminating burners of the wick type that are provided with devices at the upper end of the wick tube for the purpose of regulating the size, shape, or character of the flame. Includes devices for covering a part of the wick to produce a pilot flame or a "night light."

CLASS 67—Continued.

Search Class—

- 67—ILLUMINATING BURNERS, subclasses 38, Liquid fuel, Burners, Vapor, Blue flame wick type; 78, Liquid fuel, Burners, Extinguishers, Mechanical, Cap; 79, Liquid fuel, Burners, Extinguishers, Mechanical, Double wing; and 80, Liquid fuel, Burners, Extinguishers, Mechanical, Sliding sleeve.
73. LIQUID FUEL, BURNERS, EXTINGUISHERS. Liquid fuel illuminating burner extinguishing devices of a miscellaneous nature. The device may be manual or automatic.
74. LIQUID FUEL, BURNERS, EXTINGUISHERS, FUEL EXHAUSTION. Liquid fuel illuminating burner extinguishers wherein the extinguisher mechanism is operated by the fall in the level of the fuel in the font, as by a float. The device may be set to extinguish when the oil reaches any predetermined level, thus producing a time feed.
Note.—These devices differ from those in class 158, LIQUID AND GASEOUS FUEL BURNERS, subclass 46.5, Burners, Liquid fuel, Fuel feeding, Tanks, Reserve supply, in that they operate a flame extinguisher, whereas those in class 158, subclass 46.5 cause the fuel feed to be cut off, so that the flame fails for want of fuel.
75. LIQUID FUEL, BURNERS, EXTINGUISHERS, PNEUMATIC. Liquid fuel illuminating burner extinguishers wherein the extinction of the flame is accomplished by a current or blast of air or other gas. Also includes some implements which can be used on lamps or candles.

Search Class—

- 67—ILLUMINATING BURNERS, subclasses 17, Igniting devices, Gaseous, Pilot, Pressure operated, Multiple fluid; 29, Solid fuel, Flash lights, Shutter release and light, and 32, Solid fuel, Flash lights, Flame ignition.
76. LIQUID FUEL, BURNERS, EXTINGUISHERS, LIQUID. Liquid fuel illuminating burner extinguishers wherein a body of non-combustible liquid, generally water, is applied to the flame or mixed with the fuel to effect extinction of the flame.

Search Class—

- 158—LIQUID AND GASEOUS FUEL BURNERS, subclass 95, Burners, Liquid fuel, Lamp type, Water vaporizers.
77. LIQUID FUEL, BURNERS, EXTINGUISHERS, MECHANICAL. Liquid fuel illuminating burner extinguishers wherein the extinction of the flame is effected by mechanical means, such as plates, caps, or sleeves, which are interposed between the flame and the air supply, and which are not classifiable in the other subclasses of this group, or by withdrawing the wick within the wick tube, which thus constitutes a sleeve. This subclass is a miscellaneous one and contains patents to the combinations of the cap, wing, or sleeve type of extinguisher.

Search Class—

- 67—ILLUMINATING BURNERS, subclass 72, Liquid fuel, Burners, Wick type, Air distributors.
78. LIQUID FUEL, BURNERS, EXTINGUISHERS, MECHANICAL, CAP. Liquid fuel illuminating burner extinguishers in which the extinction of the flame is accomplished by a single cap or shutter. The cap is generally pivoted at one side of the wick tube, although it may be a part thereof.
79. LIQUID FUEL, BURNERS, EXTINGUISHERS, MECHANICAL, DOUBLE WING. Liquid fuel illuminating burner extinguishers in which the extinction of the flame is accomplished by a pair of movable caps or wings generally pivoted one on each side of the wick tube. The two wings may act together or independently.
80. LIQUID FUEL, BURNERS, EXTINGUISHERS, MECHANICAL, SLIDING SLEEVE. Liquid fuel illuminating burner extinguishers in which the extinction of the flame is accomplished by a movable sleeve or tube generally mounted on the wick tube.
81. LIQUID FUEL, FONTS. Miscellaneous liquid fuel illuminating devices wherein the invention relates to the fuel container.
- Search Class—
67—ILLUMINATING BURNERS, subclass 55, Liquid fuel burners, Wick type, Chimneyless.
82. LIQUID FUEL, FONTS, INDEPENDENT. Devices specially adapted to feed liquid fuel to illuminating burners and wherein the reservoir is not directly attached to the burner head. The invention generally is in the mere arrangement of the reservoir or burner. The devices are generally of the "student lamp" type.
Note.—Where the invention resides in the fuel feed control, it is classified in class 158, LIQUID AND GASEOUS FUEL BURNERS, under the Fuel feed subclasses.

83. LIQUID FUEL, FONTS, COLLARS. Means for connecting burner heads to the font in liquid fuel illuminating devices.
Note.—Where the invention resides in adapting the collar to catch the drip, it is classified in this class, subclass 84, Liquid fuel, Fonts, Drip catchers.
Where the invention resides in adapting the collar for venting the font, it is classified in this class, subclass 86, Liquid fuel, Fonts, Vents.
Where the invention resides in adapting the collar for use in filling, it is classified in this class, subclass 85, Liquid fuel, Fonts, Filling devices.

Search Class—

- 67—ILLUMINATING BURNERS, subclasses 84, Liquid fuel, Fonts, Drip catchers; 85, Liquid fuel, Fonts, Filling devices, and 86, Liquid fuel, Fonts, Vents.

CLASS 67—Continued.

84. **LIQUID FUEL, FONTS, DRIP CATCHERS.** Devices for either retaining the drip from liquid fuel illuminating lamps or for returning it to the font.

Search Classes—

45—FURNITURE, subclass 15, Insect guards.

221—DISPENSING CANS, subclass 39, Hand oilers, Drip catchers, Return, Vents.

85. **LIQUID FUEL, FONTS, FILLING DEVICES.** Devices for providing filling openings in the fonts of liquid fuel illuminating lamps. This opening is generally through the collar or burner head. This subclass also includes devices for holding the lamp burner while the font is being filled through the collar.

Note.—When the filler opening is through the wall of the font and the device is capable of application to any liquid container, it is classified in class 221, DISPENSING CANS, subclass 2, Filling cans, Closures, or the subclasses thereunder.

86. **LIQUID FUEL, FONTS, VENTS.** Vents applied to the collars or burner heads of liquid fuel illuminating lamps to relieve high or low pressure in the font.

Note.—Vents applied to the font itself and capable of general application to any liquid container are classified in class 221, DISPENSING CANS, subclass 31, Filling cans, Vents.

Search Classes—

67—ILLUMINATING BURNERS, subclass 84, Liquid fuel, Fonts, Drip catchers.

221—DISPENSING CANS, subclasses 20, Filling cans, Nozzles, Cut-offs, Rotary, Vented; 28, Filling cans, Nozzles, Vented; 31, Filling cans, Vents; 39, Hand oilers, Drip catchers, Return, Vents, and 59, Hand oilers, Vented.

87. **GASEOUS FUEL BURNERS.** Miscellaneous illuminating gas burners not classifiable in the subclasses hereunder.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclasses relating to gas.

88. **GASEOUS FUEL BURNERS, INCANDESCENT.** Illuminating gas burners in which the light is derived from a refractory body heated to incandescence by the flame, the burner itself being generally of the Bunsen type.

89. **GASEOUS FUEL BURNERS, INCANDESCENT, CALCIUM LIGHT TYPE.** Illuminating gas burners in which a block of lime or similar material is heated to incandescence by an oxy-hydrogen or similar flame.

Search Classes—

67—ILLUMINATING BURNERS, subclass 90, Gaseous fuel burners, Incandescent, Pressure, for burner structure.

75—METALLURGY, subclass 90, Blowpipes.

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 109, Burners, Gas, Pressure burners.

90. **GASEOUS FUEL BURNERS, INCANDESCENT, PRESSURE.** Illuminating gas burners of the incandescent type in which the pressure of the fuel at the burner head is increased. This increased pressure may be effected by a pump in the gas supply or by the introduction of a jet of compressed air.

Search Classes—

67—ILLUMINATING BURNERS, subclasses 52, Liquid fuel, Burners, Forced draft, and 100, Gaseous fuel burners, Incandescent, Mantle making.

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 109, Burners, Gas, Pressure burners.

91. **GASEOUS FUEL BURNERS, INCANDESCENT, PRESSURE, SELF-INTENSIFYING.** Illuminating gas burners of the incandescent pressure type in which the energy for operating the gas or air pumps is derived from the heat of the burner flame.

Search Class—

67—ILLUMINATING BURNERS, subclass 52, Liquid fuel, Burners, Forced draft.

92. **GASEOUS FUEL BURNERS, INCANDESCENT, RESILIENT SUPPORT.** Devices for resiliently supporting all or a part of the burner structure of incandescent illuminating gas burners (other than the mantle support alone) for the purpose of protecting the mantle from shock or vibration.

Note.—When the mantle support alone is resilient, the patent is classified in this class, subclass 104, Gaseous fuel burners, Incandescent, Mantle support, Resilient.

93. **GASEOUS FUEL BURNERS, INCANDESCENT, COMBINED UPRIGHT AND INVERTED.** Illuminating gas burner structures of the incandescent type which comprises both an upright and an inverted mantle burner.

94. **GASEOUS FUEL BURNERS, INCANDESCENT, INVERTED.** Illuminating gas burner structures of the incandescent type in which the mantle is located below the burner mouth.

Search Class—

67—ILLUMINATING BURNERS, subclass 50, Liquid fuel, Burners, Vapor, Retort, Air mixing, Inverted.

95. **GASEOUS FUEL BURNERS, INCANDESCENT, INCLINED.** Illuminating gas burner structures of the incandescent type in which the major axis of the mantle is inclined to the vertical.

96. **GASEOUS FUEL BURNERS, INCANDESCENT, UPRIGHT.** Illuminating gas burner structures of the incandescent type in which the mantle is located above the burner mouth.

CLASS 67—Continued.

97. **GASEOUS FUEL BURNERS INCANDESCENT, UPRIGHT, PREHEATER.** Illuminating burner structures of the upright incandescent type in which the gas or air is heated before combustion either by the main flame or by an auxiliary jet.

Search Classes—

67—ILLUMINATING BURNERS, subclasses under 40, Liquid fuel, Burners, Vapor, Retort; 91, Gaseous fuel burners, Incandescent, Pressure, Self-intensifying, and 94, Gaseous fuel burners, Incandescent, Inverted.

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 108, Burners, Gas, Regenerative.

98. **GASEOUS FUEL BURNERS, INCANDESCENT, MANTLES.** The physical structure of the mantle or refractory body which is designed to give out light by being heated to incandescence by a combustion flame.

Note.—Method of making the mantle is in this class, subclass 100, Gaseous fuel burners, Incandescent, Mantle making.

Receptacles for shipping mantles are classified in class 206, SPECIAL RECEPTACLES AND PACKAGES, subclass 63, Packages, Incandescent mantles.

99. **GASEOUS FUEL BURNERS, INCANDESCENT, MANTLE COMPOSITIONS.** The chemical composition of the mantle, both method and article.

100. **GASEOUS FUEL BURNERS, INCANDESCENT, MANTLE MAKING.** Devices or methods for making or regenerating mantles; also the operations of impregnating, cutting off, shaping, trimming, and firing.

Note.—Devices for shirring and threading in the supporting loop are classified in class 112, SEWING MACHINES, subclass 17, Running stitch.

Search Classes—

91—COATING, subclass 13, Combined machines, and the subclasses thereunder, for impregnating.

164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 60, Cutting, Machines, Rotary cutter, for trimmers.

101. **GASEOUS FUEL BURNERS, INCANDESCENT, MANTLE SUPPORT.** Miscellaneous devices for supporting incandescent illuminating mantles in proper position relative to the burner.

102. **GASEOUS FUEL BURNERS, INCANDESCENT, MANTLE SUPPORT INCLOSED.** Mantle supports that are inclosed within the mantle.

Search Class—

67—ILLUMINATING BURNERS, subclass 38, Liquid fuel, Burners, Vapor, Blue flame wick type.

103. **GASEOUS FUEL BURNERS, INCANDESCENT, MANTLE SUPPORT, INVERTED.** Mantle supports for mantles of the inverted type.

104. **GASEOUS FUEL BURNERS, INCANDESCENT, MANTLE SUPPORT, RESILIENT.** Mantle supports that are made resilient for the purpose of protecting the mantles from injurious shocks or vibrations.

Note.—For devices where the whole or a part of the burner structure is also made resilient, search in this class, subclass 92, Gaseous fuel burners, Incandescent, Resilient support.

105. **GASEOUS FUEL BURNERS, ACETYLENE.** Illuminating burners specially adapted for burning acetylene or similar high carbon gases. Does not include incandescent acetylene burners, which are classified in incandescent gas burners.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 101, Burners, Gas, Acetylene.

106. **GASEOUS FUEL BURNERS, ANNULAR.** Illuminating gas burners of the ring or Argand type in which air is fed through the ring to the inner side of the flame as well as to the outer side.

Search Class—

67—ILLUMINATING BURNERS, subclass 108, Gaseous fuel burners, Regenerative.

107. **GASEOUS FUEL BURNERS, MULTIPLE FLUID.** Illuminating gas burners in which one or more fluids under pressure are fed to the gas flame. These fluids are generally air or oxygen.

Search Class—

67—ILLUMINATING BURNERS, subclasses 39, Liquid fuel burners, Vapor, Multiple fluid; 89, Gaseous fuel burners, Incandescent, Calcium light type, and 91, Gaseous fuel burners, Incandescent, Pressure, Self-intensifying.

108. **GASEOUS FUEL BURNERS, REGENERATIVE.** Illuminating gas lamp structures in which the air or gas and air are preheated by the illuminating flame or by the products of combustion. Does not include incandescent gas burners nor burners which are preheated by an auxiliary flame.

Search Classes—

67—ILLUMINATING BURNERS, subclasses 87, Gaseous fuel burners; 94, Gaseous fuel burners, Incandescent, Inverted, and 97, Gaseous fuel burners, Incandescent, Upright, Preheater.

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 108, Burners, Gas, Regenerative.

109. **GASEOUS FUEL BURNERS, REGENERATIVE, GAS.** Illuminating gas burners in which the gas alone is preheated by the flame or products of combustion. Does not include incandescent gas burners.

CLASS 67—Continued.

Search Classes—

67—ILLUMINATING BURNERS, subclasses 97, Gaseous fuel burners, Incandescent, Upright, Preheater, and 91, Gaseous fuel burners, Incandescent, Pressure, Self-intensifying.

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 108, Burners, Gas, Regenerative.

110. GASEOUS FUEL BURNERS, INTERMITTENT. Illuminating gas burners which are turned on and off at short intervals in order to give a flash signal or to illuminate a sign intermittently. The control valve is run by an independent motor.

Search Class—

161—TIME CONTROLLING MECHANISM, subclass 9, Valve actuating mechanism, Gas cocks.

111. GASEOUS FUEL BURNERS, INTERMITTENT, SELF-OPERATED. Illuminating gas burners of the intermittent type in which the control valve is operated by the flow of the gas either directly by means of a motor run by the gas or indirectly by a thermostat heated by the burner. The power to operate the control valve is derived from the gas itself.

Search Class—

67—ILLUMINATING BURNERS, subclass 18, Igniting devices Gaseous, Pilot, Pressure operated, Single fluid.

112. GASEOUS FUEL BURNERS, TIPS. Improvements on the illuminating gas burner tips. The tip is generally of the fish tail or bat wing type.

Search Class—

67—ILLUMINATING BURNERS, subclass 105, Gaseous fuel burners, Acetylene.

113. GASEOUS FUEL BURNERS, AUTOMATIC CUT-OFFS. Miscellaneous devices for cutting off the flow of illuminating gas when the conditions become abnormal in the supply pipe on either side of the device. Includes combined high and low pressure cut-offs. Does not include cut-offs that are operated by the action of fire.

Note.—For cut-offs that are operated by the action of fire, see class 137, WATER DISTRIBUTION, subclass 92, Cocks and faucets, Thermal, High temperature.

114. GASEOUS FUEL BURNERS, AUTOMATIC CUT-OFFS, DRAFT. Automatic fuel cut-offs which are operated by an unusual draft striking the burner. Includes cut-offs which operate upon the cessation of the draft of hot air from the burner flame, as when the flame is extinguished.

115. GASEOUS FUEL BURNERS, AUTOMATIC CUT-OFFS, PRESSURE. Devices for automatically cutting off the flow of gas when the pressure in the supply pipe on either side of

CLASS 67—Continued.

the device drops below a predetermined limit and which stay closed upon an increase or renewal of pressure. Does not include check valves nor devices that close when the flow is abnormally increased.

116. GASEOUS FUEL BURNERS, AUTOMATIC CUT-OFFS, THERMOSTATIC. Thermostatic devices for automatically cutting off the flow of gas when the flame is extinguished.

Note.—Thermostatic regulating devices for keeping the temperature and pressure constant are classified in class 236, DAMPERS, AUTOMATIC, subclass 5, Expansion.

117. GASEOUS FUEL BURNERS, AUTOMATIC CUT-OFFS, THERMOSTATIC, SELF-SETTING. Automatic cut-offs of the thermostatic type which are automatically set upon turning on the gas. They do not require to be preheated, nor is the cock required to be held open for an interval.

118. GASEOUS FUEL BURNERS, REGULATING. Miscellaneous regulating devices specially adapted to control the flow of fuel in illuminating gas burners.

119. GASEOUS FUEL BURNERS, REGULATING, AUTOMATIC. Devices which automatically tend to control the flow of fuel to the burner by means of the variations in the gas pressure. They are generally an integral part of the burner structure, although some are located in the pipe line. These devices differ from those in class 50, FLUID PRESSURE REGULATORS, in that they are not true regulators. They merely oppose an increase or decrease in pressure or flow of fuel, but do not entirely prevent it. Fluid pressure regulators hold the pressure exactly at a predetermined point.

Search Classes—

67—ILLUMINATING BURNERS, subclass 18, Igniting devices, Gaseous, Pilot, Pressure operated, Single fluid.

50—FLUID PRESSURE REGULATORS, appropriate subclasses.

120. GASEOUS FUEL BURNERS, REGULATING, FIXED. Fixed non-adjustable devices specially adapted to control the flow of fuel to the burner. They are generally an integral part of the burner structure. Includes some devices which are placed in the pipe lines.

121. GASEOUS FUEL BURNERS, REGULATING, MANUAL. Manually operated valves specially adapted to control the flow of fuel to the burner. They are generally an integral part of the burner structure. Includes some devices which are placed in the pipe line.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 118, Gas and air mixers; 119, Gas and air mixers, Proportional, and 120, Valves and cleaners.

CLASS 69.—LEATHER MANUFACTURES.**DEFINITIONS.****Class.**

This class includes leather-working apparatus and leather articles not elsewhere classified under more specific titles.
The class does not include boots, shoes, gloves, trunks, baggage, pocket-books, or other leather receptacles or their manufacture, except such apparatus as is clearly general in its capability of operation.

It does not include leather cutting (except skiving and splitting), punching, or sewing, or the manufacture of leather from hides, skins, etc. The apparatus for the manufacture of harness is here included; but the articles of harness are elsewhere classified.

Subclasses.

1. MACHINES. Miscellaneous leather-working machines.
- 1.5. MACHINES, BELT-STRETCHING. Various machines for putting leather, canvas, or other belting under tension to take out the initial stretch or to bring the belting to uniform shape.
2. MACHINES, CUTTING AND IMPRESSING. Machines for cutting or trimming leather and at the same time creasing or otherwise impressing it for ornamental purposes or which simply crease or impress without cutting.
Search Class—
149—HIDES, SKINS, AND LEATHER, subclass 23, Apparatus, Rolling and embossing.
3. MACHINES, HORSE-COLLAR-SHAPING. Apparatus upon which horse-collars are shaped or given proper contour.
Search Class—
69—LEATHER MANUFACTURES, subclass 8, Machines, Forming and pressing.
4. MACHINES, HORSE-COLLAR-STUFFING. Apparatus for stuffing the padding material into horse-collars.
5. MACHINES, FOLDING AND ROLLING. Machines for folding or rolling or both folding and rolling leather, usually for reins for harness.
Search Class—
149—HIDES, SKINS, AND LEATHER, subclass 23, Apparatus, Rolling and embossing.
6. MACHINES, ROUNDING. Machines which by drawing or passing a string or strip therethrough will cut or roll the same to circular or semicircular shape, usually for harness-reins, fillings, or whip-lashes.
7. MACHINES, SEAM-PRESSING. Machines for pressing, rubbing, or rolling down leather seams.
Search Class—
68—LAUNDRY, subclass 10, Ironing machines.
8. MACHINES, FORMING AND PRESSING. Various molding, clamping, and pressing apparatus for forming or shaping leather articles, mostly harness parts.
Search Class—
69—LEATHER MANUFACTURES, subclass 3, Machines, Horse-collar-shaping.
9. MACHINES, SKIVING AND SPLITTING. Miscellaneous machines for skiving, splitting, or beveling leather.
Search Class—
12—BOOT AND SHOE MAKING, subclass 62, Toe and heel stiffener machines, skiving, and 46, Heel-machines, Bevel and seat cutting.
10. MACHINES, SKIVING AND SPLITTING, BELT-KNIFE. Skiving and splitting machines which employ a traveling belt or band knife.

CLASS 69—Continued.**Search Classes—**

- 69—LEATHER MANUFACTURES, subclass 13, Machines, Skiving and splitting, Fixed-knife, Roller-feed.
- 143—WOOD-SAWING, subclass 17, Band-saw machines and subclasses thereunder.
- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 35, Cutting, Machines, Band-knife.
11. MACHINES, SKIVING AND SPLITTING, FIXED-KNIFE. Skiving and splitting machines which employ a stationary cutter against which the work is drawn or fed.
Search Class—
164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 36, Cutting, Machines, Fixed-cutter.
12. MACHINES, SKIVING AND SPLITTING, FIXED-KNIFE, RECIPROCATING-FEED. Fixed-knife skiving and splitting machines in which a reciprocating feed mechanism is employed to carry the work to the fixed cutter.
Search Classes—
144—WOODWORKING, subclass 175, Slicers, Fixed-knife.
164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 38, Cutting, Machines, Fixed-cutter, Work-feeding.
13. MACHINES, SKIVING AND SPLITTING, FIXED-KNIFE, ROLLER-FEED. Fixed-knife skiving and splitting machines in which the work is fed to the fixed cutter by positively-driven rolls.
Search Classes—
69—LEATHER MANUFACTURES, subclass 10, Machines, skiving and splitting, Belt-knife.
144—WOODWORKING, subclass 175, Slicers, Fixed-knife.
164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 39, Cutting, Machines, Fixed-cutter, Work-feeding, Roller-feed.
14. MACHINES, SKIVING AND SPLITTING, FIXED-KNIFE, ROLLER-FEED, TRIMMING ATTACHMENTS. Roller-feed, fixed-knife skiving and splitting machines which employ a trimming-knife in addition to the skiving or splitting knife to trim the edge of the passing work.
15. MACHINES, SKIVING AND SPLITTING, RECIPROCATING-KNIFE. Skiving and splitting machines in which the cutter is reciprocated. Either the work is fed against the knife or lies stationary while the knife operates.
16. MACHINES, SKIVING AND SPLITTING, ROTARY DISK KNIFE. Skiving and splitting machines, usually for skiving, in which is employed a disk knife which shaves off the portions as it passes over the surface of the work.
17. MACHINES, STRAP-FINISHING. Machines for rubbing, blacking, polishing, creasing, burnishing, and otherwise finishing leather straps.
18. MACHINES, TACK-LEATHERING. Machines for attaching the leather heads to carpet-tacks. Usually the leather disks are cut out from a continuous strip and the tacks inserted by a plunger through the disks.
Search Class—
1—NAILING AND STAPLING, subclass 6, Machines, Nail-driving, Nail-feeding.
19. WORK-HOLDERS. Various clamping apparatus for holding leather while it is being worked upon mostly "stitching-horses" for saddlers or harness-makers.
Search Class—
223—APPAREL APPARATUS, subclass 54, Work-holders.
20. TOOLS. Various hand-tools peculiar to the leather-workers' art.
21. ARTICLES AND PROCESSES. Various leather structures—such as bindings or pipings, seams, and ornamental pieces—of more or less general use in making up complete articles; also, some leather-working processes are here included.

CLASS 72.—MASONRY AND CONCRETE STRUCTURES.**DEFINITIONS.***Class.*

This class is intended to include all patents for masonry and concrete structures capable of application to constructions in general.

Devices which are practically inseparable from the art where they are used will be classified in the particular art classes.

Subclasses.

1. BUILDINGS. Miscellaneous features of masonry buildings not properly classifiable in any of the subclasses hereunder.
2. ABOLISHED. See class 20.
3. ABOLISHED. See class 20.
4. ABOLISHED. See class 20.
5. ABOLISHED. See class 20.

6. BUILDINGS, ELEVATORS AND BINS. Masonry or concrete structures built either to withstand great internal pressure or to provide sloping bottoms or to provide for the grouping of a plurality of tanks or bins in close relationship.

Search Classes—

20—WOODEN BUILDINGS, subclasses 1, 2 Bins, and 1, 4 Bins, Silos.

130—THRESHING, subclass 14, Granaries and bins.

189—METALLIC BUILDING STRUCTURES, subclass 3, Buildings, Bins.

7. BUILDINGS, VAULTS. Overground burial-vaults and all underground burial-vaults of masonry or concrete and features of construction thereof that are not specifically identified with some particular art.

Note.—Mausoleum-roofs are classified in this class, subclass 89, Coving, Vault.

8. BRIDGES. Concrete or masonry bridges wherein the features claimed are more than the arch structure or the flooring.

Note.—Masonry or concrete bridge arches *per se* are classified in this class, subclasses 56, Arches, Bridge, and 57, Arches, Bridge, Metal-lined.

Masonry or concrete bridge floorings *per se* are classified in this class, subclass 64, Arches, Floor, Bridge.

9. CISTERNS. Miscellaneous inventions directed toward masonry well and cistern constructions capable of application to either and all specific constructions capable of application to cisterns only.

Note.—All masonry constructions providing for the entrance of water at the bottom thereof are classified in this class, subclass 12, Wells.

10. CELLARS. Cellar-bottoms, constructed to provide drainage facilities and the like.

Note.—Waterproofing of cellar-walls is classified in this class, subclass 126, Waterproofing, Cellars.

11. CELLARS, CAVES. Outdoor vegetable-caves, cyclone-cellars, and the like.

12. WELLS. Masonry structures built or sunk in the ground that allow for the entrance of water at or near the bottom thereof.

13. TANKS. Miscellaneous masonry or concrete tanks and features of construction thereof.

Search Class—

72—MASONRY AND CONCRETE STRUCTURES, subclasses 6, Buildings, Elevators and bins, and 9, Cisterns.

14. TANKS, LINED. Masonry or concrete tanks that are provided with a lining either for waterproofing or for protection.

15. BUILDING ELEMENTS AND SUPPORTS, INTEGRAL. Metal-reinforced structures in which the floors or beams and the walls or other supports are cast integrally, so that the entire structure is a monolith.

16. WALLS. Miscellaneous features of wall construction that do not readily fall under any of the subclasses hereunder.

17. WALLS, FACED. Miscellaneous walls or floors provided with a facing in which the invention resides in the facing or its mode of union with the wall.

18. WALLS, FACED, TILE. Miscellaneous walls faced with tiles and the tiles themselves for facing such walls where the tiles form the finish of the walls. The tiles may be either metallic or plastic in substance; but if metallic they are to be set in some plastic backing.

19. WALLS, FACED, TILE, WALL-ANCHORED. Miscellaneous means for anchoring facing-tiles to walls, except by pressing into a plastic backing.

CLASS 72—Continued.

20. WALLS, FACED, TILE, WALL-ANCHORED, METAL-REINFORCED. Facing-tiles provided with a metal anchoring means whereby the tile is firmly secured to the wall.

21. WALLS, FACED, TILE, WALL-ANCHORED, BONDED. Means for attaching facing to masonry work by means of bonds with such masonry work.

22. WALLS, FACED, TILE, FLEXIBLE-BACKED. Facing-tiles with a flexible backing whereby to facilitate handling or packing them.

23. WALLS, FACED, TILE, RIGID-BACKED. Facing-tiles with rigid backings whereby to facilitate handling or packing them.

24. WALLS, FACED, TILE, FRAMED. Means whereby facing-tiles, either singly or in groups, are held in place by some structure in the nature of a frame.

25. WALLS, FACED, TILE, INTERLOCKING. Such facing-tiles as are mutually interlocked when set.

26. WALLS, FACED, TILE, FACED ELEMENTS. Facing-tiles that are themselves faced, when the invention resides in the facing.

27. WALLS, FACED, MONOLITHIC. Non-reinforced monolithic facings for walls.

28. WALLS, FACED, MONOLITHIC, METAL-REINFORCED. Monolithic facings for walls that are provided with a metal reinforcement.

29. WALLS, BLOCK AND PLASTIC, PLASTIC-FILLED. Non-reinforced walls formed from hollow blocks and either wholly or partially filled with plastic material and blocks for forming such walls.

30. WALLS, BLOCK AND PLASTIC, PLASTIC-FILLED, METAL-REINFORCED. Metal-reinforced walls formed from hollow blocks and either wholly or in part filled with plastic material and blocks for forming such walls.

31. WALLS, BLOCK AND PLASTIC, PLASTIC-COVERED. Non-reinforced walls so constructed that they are not finished without a covering of plastic material, wherein the invention resides in the wall itself and not in the covering. This subclass also includes blocks so scored or deformed that they may be plastered to.

32. WALLS, BLOCK AND PLASTIC, PLASTIC-COVERED, METAL-REINFORCED. Reinforced walls so constructed that they are not finished without a covering of plastic material, wherein the invention resides in the wall and not in the covering. This subclass also includes elements of construction of such walls.

33. WALLS, WOOD AND PLASTIC. Walls in which wood forms the main bulk and yet in which the wood is so intimately associated with the plastic material that the finished structure has the appearance of being a monolith.

34. WALLS, FENCES. Miscellaneous masonry or concrete fence structures.

35. WALLS, BLOCK, FACED, ATTACHED. Building-blocks capable of general application that are provided with a facing that is attached to the block after the substance of the block is set or while it is setting.

36. WALLS, BLOCK, FACED, INTEGRAL. Building-blocks capable of general application that are provided with a facing that is either cast with the block or else is some modification of the substance of the main portion of the block.

37. WALLS, BLOCK, SOLID. Miscellaneous solid building-blocks not otherwise provided for and walls built therefrom. The blocks, if otherwise solid, may have a groove on one side thereof or running entirely therearound.

Search Class—

94—PAVING, subclass 1, Pavements, Concrete.

38. WALLS, BLOCK, SOLID, INTERLOCKED. Solid blocks provided with a positive interlocking means therebetween and walls built therefrom.

39. WALLS, BLOCK, SOLID, ANGULAR. Building-blocks formed with re-entrant angles on their exteriors, so that when they are laid in the wall they provide either an inter-bonded wall or else a wall with air-spaces.

40. WALLS, BLOCK, SOLID, METAL-REINFORCED. Miscellaneous solid building-blocks that are provided with a metal reinforcement that are not otherwise provided for and walls built therefrom. The blocks, if otherwise solid, may have a groove on one side thereof or running entirely therearound.

CLASS 72—Continued.

41. **WALLS, BLOCK, HOLLOW.** Non-reinforced blocks intended for general wall construction provided either with an opening running completely through the block or a recess on one or more sides that renders the block substantially hollow and walls built from such blocks.
42. **WALLS, BLOCK, HOLLOW, METAL-REINFORCED.** Hollow blocks that are provided with a metal reinforcement.
43. **WALLS, BLOCK, PARALLEL-SPACED.** Building-blocks that are formed with two main portions separated by either one or more thin webs or else by posts. The posts or webs in this subclass may be any but a metallic substance and may be either cast integrally with the blocks or joined thereto by cement or the like. This subclass also includes walls built from such blocks as are herein defined.
44. **WALLS, BLOCK, PARALLEL-SPACED, METAL-REINFORCED.** Building-blocks that are formed with two main portions separated by metal posts or sheets and walls built therefrom. The main portions may or may not be reinforced with metal.
45. **WALLS, BLOCK, FIBER.** Blocks formed from hay, straw, bagasse, and the like and walls built therefrom, whether covered with plastic material or not.
46. **WALLS, MONOLITHIC, PARTITION.** Monolithic wall structures of such construction that they are essentially partitions.
47. **WALLS, MONOLITHIC, HOLLOW.** Hollow walls cast from concrete, *in situ*, that are not provided with a metal reinforcement.
48. **WALLS, MONOLITHIC, HOLLOW, METAL-REINFORCED.** Hollow walls cast from concrete, *in situ*, that are provided with a metal reinforcement.
49. **WALLS, MONOLITHIC, SOLID.** Solid monolithic walls cast *in situ* not provided with a metal reinforcement, whether cast about wooden studding or not.
50. **WALLS, MONOLITHIC, SOLID, METAL-REINFORCED.** Solid walls cast from concrete or the like, *in situ*, and provided with metal reinforcement.

Search Class—

61—HYDRAULIC ENGINEERING, subclass 24, Dams and levees.

51. **CONDUITS.** Masonry conduits capable of general application and not specifically provided for in any of the subclasses hereunder given.

Note.—Conduits which are intimately associated with any particular art are to be classified with such art.

Search Classes—

61—HYDRAULIC ENGINEERING, subclasses 9, Drains, and 16, Tunnels.

137—WATER DISTRIBUTION, MAINS AND PIPES.

182—SEWERAGE, subclass 3, Construction.

242—ELECTRICITY CONDUITS, all subclasses.

52. **CONDUITS, CULVERTS.** Small masonry conduits for water courses under roads; does not include those large arch structures that are in reality arch bridges.

Note.—Metallic culvert structures are to be found in class 61, HYDRAULIC ENGINEERING, subclasses 9, Drains, and 16, Tunnels.

53. **CONDUITS, PIPES.** Cement or concrete pipes, not classifiable in the next subclass, so constructed as to withstand internal pressure, whether internally reinforced with a skeleton reinforcement or not.

Search Class—

61—HYDRAULIC ENGINEERING, subclass 16, Tunnels.

54. **CONDUITS, PIPES, LINED AND COVERED.** Pipes formed from plastic material and provided with either a lining, a covering, or an internal stiffening means, said stiffening means being in the form of a sheet and either plain or deformed in any way to give increased contact for the plastic material.

Search Class—

61—HYDRAULIC ENGINEERING, subclass 16, Tunnels.

55. **ARCHES.** Arches, whether of metal, stone, or composite building material, which are independent of any particular art and which are of such general character as not to fall under any of the subclasses following hereunder.

Search Classes—

61—HYDRAULIC ENGINEERING, subclass 16, Tunnels.

110—FURNACES, subclass 99, Furnace structure, Arches.

182—SEWERAGE, subclass 3, Construction.

56. **ARCHES, BRIDGE.** Masonry bridge-arches, aside from subclass 57, Arches, Bridge, Metal-lined, in which the invention resides in the construction of the arch proper, and does not include the structure of abutments or spandrel walls.

Note.—All purely metal or wooden arch-bridge structures are in class 14, BRIDGES, subclass 24, Arch, and the subclasses thereunder.

57. **ARCHES, BRIDGE, METAL-LINED.** The title is self-explanatory.

Note.—This subclass does not include small pipe-like culverts, which are classified in class 61, HYDRAULIC ENGINEERING, subclass 9, Drains.

CLASS 72—Continued.

58. **ARCHES, FIREPLACE.** Arches built in the floor to give protection to the floor from the fireplace.
59. **ARCHES, GIRDERS.** Miscellaneous masonry or concrete girders not specifically provided for in the subclasses hereunder given.
60. **ARCHES, GIRDERS, PLASTIC-FILLED.** Girders formed of metal shells filled with plastic material.
61. **ARCHES, GIRDERS, METAL-REINFORCED.** Girders cast from concrete that are provided with metal reinforcement, and the reinforcements therefor.
62. **ARCHES, GIRDERS, ATTACHING.** Means for attaching shafting and other fixtures to concrete girders.
63. **ARCHES, FLOOR.** Miscellaneous masonry or concrete floors that do not readily fall under any of the subclasses hereunder given.
64. **ARCHES, FLOOR, BRIDGE.** Heavy masonry or concrete flooring structures which are peculiarly adapted to bridge-flooring.
65. **ARCHES, FLOOR, TILE AND CONCRETE.** Floors formed with main supporting elements between which are placed non-reinforced tiles of considerably less thickness than that of the finished floor, thus allowing for a filling.
66. **ARCHES, FLOOR, TILE AND CONCRETE, METAL-REINFORCED.** Floors formed with main supporting elements between which are placed either supplemental reinforcing means together, with non-reinforced tiles, or metal-reinforced tiles without supplemental reinforcing means between the main supports, or both, in either case the tiles being of considerably less thickness than that of the finished floor, thus allowing for a filling.
67. **ARCHES, FLOOR, TILE.** Floors formed with main supporting elements between which are placed non-reinforced tiles of substantially the same thickness of the finished floor, thereby doing away with filling.
68. **ARCHES, FLOOR, TILE, METAL-REINFORCED.** Floors formed with main supporting elements between which are placed either supplemental reinforcing means, together with non-reinforced tiles, or metal-reinforced tiles without supplemental reinforcing means between the main supports, or both, in either case the tiles being substantially the thickness of the finished floor, thereby doing away with filling.
69. **ARCHES, FLOOR, CONCRETE.** Those floors that are cast *in situ* from concrete with no reinforcement save the main supports therefor.
70. **ARCHES, FLOOR, CONCRETE, EXTERNALLY METAL REINFORCED.** Metal-reinforced floors cast *in situ* from concrete in which the principal reinforcement is either entirely external to the concrete or is merely superficially embedded therein.
71. **ARCHES, FLOOR, CONCRETE, INTERNALLY METAL REINFORCED.** Metal-reinforced floors cast *in situ* from concrete in which the principal reinforcement is designed to be so embedded in the concrete as to take up the principal strains set up therein.
72. **COLUMNS.** Miscellaneous masonry or concrete columns.
73. **COLUMNS, TILE-COVERED.** Inventions in the application of covering tiles to columns either with or without intermediate filling of plastic materials.
74. **COLUMNS, PLASTIC-COVERED.** Inventions capable of application to building constructions in general, in which the invention resides in the application of a plastic covering to a supporting-column either with or without an intermediate air-space.

Search Class—

61—HYDRAULIC ENGINEERING, subclass 43, Piles, Protected.

75. **COLUMNS, PLASTIC-FILLED.** Columns that are formed of an iron or steel shell with a filling of plastic material. If there be an interior supporting member, it is more in the nature of a stiffening member than a support for a load.

Search Class—

61—HYDRAULIC ENGINEERING, subclass 43, Piles, Protected.

76. **COLUMNS, METAL-REINFORCED.** Building-columns formed of concrete with internal metal reinforcing and all such reinforced concrete columns as are not intimately associated with some particular art.

Search Classes—

72—MASONRY AND CONCRETE STRUCTURES, subclasses 81, Foundations, Concrete piles, and 82, Posts.

238—RAILWAY-TIES AND FASTENERS, subclass 3, Stringers and ties, Composition.

77. **FOUNDATIONS.** Foundations not inseparably associated with some art and not included in the subclasses hereunder.

78. **FOUNDATIONS, MACHINE.** Includes only machine-piers.

CLASS 72—Continued.

79. FOUNDATIONS, SHORING. Methods of shoring and all devices specifically adapted for that purpose.
Search Class—
 61—HYDRAULIC ENGINEERING, subclass 52, Piles, Sheet-piling.
80. FOUNDATIONS, PIERS. Masonry bridges, piers, and abutments and all pier structures that employ plastic material in their structure.
81. FOUNDATIONS, CONCRETE PILES. Pile structures that are formed of concrete blocks, solid bodies of concrete or other conglomerate, armored concrete, and the like, and also those methods of making piles which consists in forming them *in situ*.
82. POSTS. Posts formed of stone or plastic material.
Search Class—
 72—MASONRY AND CONCRETE STRUCTURES, subclasses 76, Columns, Metal-reinforced, 81, Foundations, Concrete piles, and 85, Telegraph-poles.
83. POSTS, INSEPARABLE BASES. Bases formed of plastic material or stone, which are inseparably attached to the post.
84. POSTS, SEPARABLE BASES. Bases formed of plastic material or of stone, that are so attached to the post as to be more or less readily separated therefrom.
85. TELEGRAPH-POLES. Concrete or concrete and iron poles which have some feature that makes them primarily suited for use as telegraph-poles.
 Note.—All masonry or concrete pole or column structures capable of general application are to be classified in this class, subclass 72, Columns and the subclasses thereunder.
86. COPING. Miscellaneous coping structures including such coping structures as do not fall under any of the subclasses hereunder.
87. COPING, BORDERS. Grass-borders, borders for flower-beds, coping for graves, etc., but not pavement-gutters.
Search Class—
 94—PAVING, subclasses 1, Pavements, Concrete, and 2, Gutters.
88. COPING, CHIMNEY-CAPS. Chimney-caps irrespective of what material they may be made.
89. COPING, VAULT. Such vault-coverings as are in the nature of mausoleum-roofs.
90. SMOKE-FLUES. Masonry or concrete smoke-flues that do not readily fall under any of the following subclasses.
91. SMOKE-FLUES, BLOCK. Smoke-flues built up from blocks, aside from those classified in this class, subclass 93, Smoke-flues, Stacks.
92. SMOKE-FLUES, SECTIONAL. Smoke-flues formed of sections of such character that each section forms a complete zone of the flue.
93. SMOKE-FLUES, STACKS. Large factory-stacks whether built up from blocks or cast from concrete.
Search Class—
 72—MASONRY AND CONCRETE STRUCTURES, subclass 6, Buildings, Elevators and bins.
94. SMOKE-FLUES, LINED. Smoke-flues wherein the invention resides either in the lining itself or in its application to the flue.
95. SMOKE-FLUES, BASES. Smoke-flue bases as such.
 Note.—Devices for collecting soot at the base of smoke-flues are classified in class 126, STOVES AND FURNACES, subclass 280, Soot-catchers.
96. STAIRS. Stairs built from blocks or cast from concrete; also iron stairs faced with slabs or concrete and nosings for concrete stair-steps.
97. DOORS. Doors in which a plastic compound figures largely as part of the construction.
Search Classes—
 20—WOODEN BUILDINGS, subclasses under Doors.
 189—METALLIC BUILDING STRUCTURES, subclass 46, Doors, and subclasses thereunder for elements of construction.
98. SILLS AND JAMBS. Masonry or concrete jambs and sills wherein the jamb or sill is claimed as such.
99. WINDOWS. Window-sashes made from plastic material whether covered with metal or not.
 Note.—Window-frames formed from plastic material are in this class, subclass 98, Sills and jambs.
100. MANHOLES AND COVERS. Covers for cisterns, wells, and the like and all such masonry manholes as are not inseparably associated with some particular art.
Search Classes—
 72—MASONRY AND CONCRETE STRUCTURES, subclass 9, Cisterns.
 182—SEWERAGE, subclasses 3, Construction, and 10, Manholes, Catch-basins, and cesspools.
 247—ELECTRICITY, CONDUITS, all subclasses under Junction-boxes.
101. BONDING AND TYING. Miscellaneous devices for joining masonry structures or for attaching articles to masonry work not intimately associated with any particular art and not specifically provided for in the subclasses hereunder given.

CLASS 72—Continued.

102. BONDING AND TYING, BONDING. Inventions in the application of bonding bricks to masonry blockwork.
103. BONDING AND TYING, TIES. Metallic articles of manufacture designed to bind masonry work in course.
104. BONDING AND TYING, CLAMPS. Devices that bind together masonry structures or bind articles to masonry work with a clamping action not otherwise provided for.
 Note.—This subclass does not include nuts embedded in the masonry work to serve as attaching means. Such devices are classified in this class, subclass 105, Bonding and tying, Fixing-blocks.
- Search Class—**
 85—DRIVEN, HEADED, AND SCREW-THREADED FASTENINGS, subclasses 2, Bolts, Expanding core, 2.4, Bolts, Expanding sleeve, and 2.8, Bolts, Expanding sleeve, Double wedge.
105. BONDING AND TYING, FIXING-BLOCKS. Attaching devices not otherwise provided for designed to be embedded in masonry work.
 Note.—This subclass has special reference to nailing clips and blocks.
Search Class—
 85—DRIVEN, HEADED, AND SCREW-THREADED FASTENINGS, subclasses 2, Bolts, Expanding core, 2.4, Bolts, Expanding sleeve, and 2.8, Bolts, Expanding sleeve, Double wedge.
106. BONDING AND TYING, JOINTS. Miscellaneous masonry joints, such as expansion-joints, and joints between new and old concrete work.
 Note.—Joints for reinforcing elements are in this class, subclass 114, Reinforcing elements, Joints.
107. BONDING AND TYING, JOINT, BLOCK. Includes joints between individual blocks, being mostly means for keying the blocks together or devices for preventing the mortar from spreading into the blocks.
108. BONDING AND TYING, ANCHORS AND SOCKETS. Devices particularly adapted to masonry work for anchoring joists and the like to masonry work.
 Note.—Timber-seats and post-caps not specifically applicable to masonry and concrete structures are classified in class 20, WOODEN BUILDINGS, subclasses 94, Joist connections, and 95, Framing-sockets.
109. REINFORCING ELEMENTS. Metal reinforcements for masonry work that do not readily fall under any of the subclasses following hereunder.
110. REINFORCING ELEMENTS, COMPOUND. Reinforcing elements *per se* that are built up and include more than attached shear members.
111. REINFORCING ELEMENTS, BARS. Such reinforcing elements as are simple bars, where invention is in the peculiar form given to such bars.
112. REINFORCING ELEMENTS, BARS, ATTACHED SHEAR MEMBERS. Reinforcing elements that are in the shape of bars with shear members attached thereto.
113. REINFORCING ELEMENTS, BARS, INTEGRAL SHEAR MEMBERS. Such reinforcing elements as are in the form of bars with shear members formed integrally therewith.
114. REINFORCING ELEMENTS, JOINTS. Devices for joining reinforcing elements designed for concrete and masonry work.
115. REINFORCING ELEMENTS, STUDDING. Mainly devices particularly adapted to support thin building partitions.
116. REINFORCING ELEMENTS, LATHING. Miscellaneous lathing devices and processes, not otherwise provided for.
 Note.—Wooden lathing is in class 20, WOODEN BUILDINGS
117. REINFORCING ELEMENTS, LATHING, EXPANDED-METAL. Metal lathing made of sheet metal that has been sht, bent, and stretched.
 Note.—Plain punched sheet metal is classified in this class, subclass 116, Reinforcing elements, Lathing.
118. REINFORCING ELEMENTS, LATHING, FURRING AND FASTENING. Devices for spacing and fastening non-wire metal lathing.
Search Class—
 189—METALLIC BUILDING STRUCTURES, subclass 34, Structural units, and the subclasses thereunder.
119. REINFORCING ELEMENTS, LATHING, WIRE. The title is self-explanatory.
120. REINFORCING ELEMENTS, LATHING, WIRE, FURRING AND FASTENING. Furring and fastening devices peculiarly adapted to use with wire lathing.
Search Class—
 189—METALLIC BUILDING STRUCTURES, subclass 34, Structural units, and the subclasses thereunder.
121. REINFORCING ELEMENTS, LATHING, CORNER-BEADS. Devices for preventing plaster from being knocked off of corners.
Search Class—
 20—WOODEN BUILDINGS, subclass 74, Moldings.

CLASS 72—Continued.

122. **REINFORCING ELEMENTS, SPACERS.** Devices for spacing reinforcing elements from each other and from the mold while the plastic material is being put in the mold.
123. **PLASTERING.** Miscellaneous plastering operations and devices that do not fall within either of the two following subclasses.
124. **PLASTERING, PLASTER-BOARDS.** Composition and compound foundations designed as supports for plastering, calcimine, etc., when claimed as articles of manufacture, except such as fall under the next subclass.
125. **PLASTERING, PLASTER-BOARDS, ORNAMENTS.** Wall ornaments, whether in the form of "trim," ceiling ornaments, or cornice-moldings, when made of plastic or analogous material.
126. **WATERPROOFING, CELLARS.** Limited to inventions for waterproofing cellars.
Note.—Where the invention is capable of general application, it should be classified under subclass 127, Waterproofing, Walls.
127. **WATERPROOFING, WALLS.** Limited to inventions for waterproofing walls and the like that are capable of general application.
128. **IMPLEMENTS.** Hand implements used in masonry and plastering work which do not readily fall under any of the subclasses hereunder given.

CLASS 72—Continued.

129. **IMPLEMENTS, BRICKLAYING-MACHINES.** Devices for holding a quantity of bricks while being laid and machines for setting bricks.
130. **IMPLEMENTS, PLASTERING-MACHINES.** Devices for spreading mortar and the like on tiles in a frame, and similar devices when used on work intended for masonry, as well as machines for spreading mortar on walls, ceilings, and the like.
131. **IMPLEMENTS, RUNNING-MOLDS.** Cornice-molding devices and all masons' tools on that order.
132. **IMPLEMENTS, GAGES.** Masonry gages and all devices for holding gage-lines for masonry work.
133. **IMPLEMENTS, PLUMBS.** Devices to be used in and especially adapted to the plumbing of masonry walls.
134. **IMPLEMENTS, HODS.** Bricks and mortar receptacles to be carried on the shoulders.
135. **IMPLEMENTS, HAWKS.** Hand trays for holding mortar.
136. **IMPLEMENTS, TROWELS AND FLOATS.** The title is self-explanatory.
137. **IMPLEMENTS, SCRAPERS.** Devices for scraping off old calcimine, wall-paper, and the like in order to fit ceilings and walls for a new covering.
138. **IMPLEMENTS, POINTERS.** Miscellaneous devices for giving to the seams of masonry a finish and also for giving to masonry work the appearance of being seamed.

CLASS 76.—METAL TOOLS AND IMPLEMENTS, MAKING.**DEFINITIONS.***Class.*

This class comprises special machines, processes, blanks, and dies for making tools, many of which are designated by the subclass titles, while the remainder are to be found in the proper miscellaneous subclasses.

The class includes mechanisms for sharpening various cutting-tools by the removal of the stock adjacent to the edge of the same by a cutting or filing action as distinguished from an abrading action. Mechanism for sharpening harrow-disks, etc., are included in this class under subclass 85, Cutting-sharpeners, Rotary, because of their analogy to the other types of cutting sharpeners.

This class also includes machines and processes for making dies, whether to be used as hand-operated implements or in forging or other machines.

This class does not include machines for die-rolling various tools, these being classified in class 80, METAL-ROLLING, under the die-rolling subclasses.

Nor does this class include patents for merely bending or twisting the blank in the process of the manufacture of special tools. Such patents are to be found under the proper subclasses of class 153, METAL-BENDING.

General operation machines, though adapted by the substitution of special tool-forming dies to form tools, are classified in the general operation classes.

Subclasses.

1. MISCELLANEOUS. Machines for making tools and implements not classifiable elsewhere.
2. MACHINES, AUGER. Machines specially adapted to form augers.
Note.—Machines for cutting spiral grooves in augers are classified in class 90, GEAR-CUTTING, MILLING, AND PLANING, subclass 13, Milling, Pattern-controller.
Machines for twisting augers are classified in class 153, METAL-BENDING, subclass 78, Twisting.
3. MACHINES, AUGER, CLEARING AND LIP-CUTTING. Machines for cutting away the material of the auger-bit adjacent to the cutting edge to give clearance to the blade and also machines for forming the cutting-lips of the bit.
Note.—Machines for performing these operations by grinding are classified in class 51, GRINDING AND POLISHING.
4. MACHINES, DIE-FORMING. Machines specially adapted to form dies to be used in metal shaping or forging machines or in punching-machines.
Note.—This subclass does not include machines for engraving dies for printing, which are in class 159, ENGRAVING, nor machines for making matrices for printing-type, which are classified in class 198, MATRIX-MAKING.
5. MACHINES, DRILL FORMING AND SHARPENING. Machines specially adapted to form drills or to sharpen drills by swaging or by cutting away the stock adjacent to the edges of the drill.
Note.—Machines for sharpening drills by grinding with an abrasive material are classified in class 51, GRINDING AND POLISHING.
Machines for grooving drill-bits by milling are classified in class 90, GEAR-CUTTING, MILLING, AND PLANING, subclass 13, Milling, Pattern-controller.
Machines for merely twisting drills are classified in class 153, METAL-BENDING, subclass 78, Twisting.
6. MACHINES, EYE-HEADED TOOL. Machines for forging tool-heads which are provided with eyes in which the handle is to be secured, also machines for piercing the eyes, and machines for making hammers, picks, mattocks, and hoes having eyes for the handles.
Search Class—
78—METAL FORGING AND WELDING, subclass 9, Forging, Billet-piercing.
7. MACHINES, EYE-HEADED TOOL, AX. Machines specially adapted to forge and shape ax-polls and hatchet-heads.
Search Classes—
76—METAL TOOLS AND IMPLEMENTS, MAKING, subclass 6, Machines, Eye-headed tool.
78—METAL FORGING AND WELDING, subclass 18, Power hammers and presses, Die-inclosed work.
8. MACHINES, EYE-HEADED TOOL, AX, ADJUSTABLE HEADER. Machines having plungers or dies adapted to be adjusted in such a manner that ax-heads having different weights may be forged in the same dies.
Search Class—
78—METAL FORGING AND WELDING, subclass 18, Power hammers and presses, Die-inclosed work.
9. MACHINES, SOCKET, STRAP, AND TANG TOOL. Machines adapted to forge and shape various tool-heads having handle-sockets (not eyes), straps, or tangs, including hoes, shovels, rakes, pitchforks, etc.
10. MACHINES, WRENCH. Machines specially adapted to forge and shape the parts of wrenches.

CLASS 76—Continued.

11. MACHINES, BLANK-SPLITTING. Machines for splitting tool-blanks, usually for the purpose of forming the "straps" to which the handle is secured. Also machines for splitting ax-polls for the insertion of the steel bit.
12. FILE-CUTTING. Miscellaneous machines for forming the cutting ribs or teeth of files and rasps.
Note.—Machines for cleaning or resharpening files by means of a blast of sand or other abrading material are classified in class 51, GRINDING AND POLISHING.
For resharpening by means of immersion in an acid-bath and the application of an electric current see class 204, ELECTROCHEMISTRY, subclass 7, Electrolysis, Aqueous bath, Cathodes, Cleaning.
13. FILE-CUTTING, RASP-PUNCHING. Machines specially adapted to form rasping-teeth upon file-blanks, usually by swaging up the teeth from the surface of the blank by means of punches. These machines are usually characterized by mechanism adapted to shift the bed or the tool in such a manner as to form the teeth in staggered rows.
14. FILE-CUTTING, SWAGING. Machines which force up the file-ribs by means of a cutter or punch which is actuated by pressure as distinguished from a blow.
Search Classes—
76—METAL TOOLS AND IMPLEMENTS, MAKING, subclass 13, File-cutting, Rasp-punching.
80—METAL-ROLLING, subclass 10, Screw-threads, Rods and wires.
15. FILE-CUTTING, TRIP-OPERATED CUTTER. Machines in which the cutter is raised against a spring or weight by means of a trip-cam or other device, which upon release causes the cutter to strike a blow upon the file-blank.
16. FILE-CUTTING, TRIP-OPERATED CUTTER, BLOW-CONTROLLED. Machines in which the cutter is raised against a spring or weight by means of a trip-cam, which upon release causes the cutter to strike a blow upon the file-blank and which is provided with means, usually automatic, for increasing or decreasing the force of the blow in conformity to the width or thickness of the file-blank as it is fed beneath the cutter.
17. FILE-CUTTING, IDLE CUTTER, HAMMER-OPERATED. Machines in which the cutter is supported over the blank, usually by a spring, and is struck by a hammer, generally power-operated.
18. FILE-CUTTING, IDLE CUTTER, HAMMER-OPERATED, BLOW-CONTROLLED. Machines in which the cutter is supported over the blank, usually by a spring, and is struck by a power-operated hammer, the force of the blow being increased or diminished, usually automatically, in conformity to the width or thickness of the file-blank as it is fed beneath the cutter.
19. FILE-CUTTING, PRESSERS. Pressers for holding the file-blank upon the bed of the file-cutting machine.
20. FILE-CUTTING, BEDS AND CLAMPS. Beds for supporting the file-blanks, also the clamps for securing said blanks to the beds.
Note.—The beds in this class are mostly of the oscillating type.
21. FILE-CUTTING, CUTTER-HEADS. Cutter-heads and holders for the cutting-tool or punch of file or rasp making machines.
22. FILE-CUTTING, FEEDING. Miscellaneous devices for feeding the blanks to the file cutting or punching mechanisms.
23. FILE-CUTTING, FEEDING, SCREW-OPERATED. Mechanisms for feeding the blanks to the file cutting or punching devices, comprising a screw-feed for advancing the blank carriage or clamp.
24. FILE-CUTTING, PROCESSES. Processes for cutting or resharpening files by machines or by chemical action.
Note.—This subclass does not include processes which have electrolytic action, which are classified in class 204, ELECTROCHEMISTRY, subclass 7, Electrolysis, Aqueous bath, Cathodes, Cleaning.
25. SAW-MAKING. Miscellaneous machines and devices for forming and fitting saws.
Note.—Processes for making and fitting saws are classified in this class, subclass 112, Blanks and processes, Saws.
26. SAW-MAKING, STRETCHING, HAMMER. Machines for stretching and straightening saw-blades or sections thereof for the purpose of reducing "buckled" portions by means of a hammering action; also devices for supporting saws upon anvils, thus adapting them to be stretched by a manually-operated tool.
27. SAW-MAKING, STRETCHING, ROLLER. Machines for stretching and straightening saw-blades, comprising a pair of rollers or a roller and bed, between which the saw-blade is passed.

CLASS 76—Continued.

28. **SAW-MAKING, TOOTH-FORMING, CHISEL-CUTTING.** Machines in which saw-teeth are formed upon a blank by means of a chisel, which, being forced into the edge of the blank, cuts and swages up the saw-teeth, also machines having chisel-cutters adapted to shave the tooth, the line of movement of the cutter being in the plane of the disk.

Search Classes—

- 76—METAL TOOLS AND IMPLEMENTS, MAKING, subclass 12, File-cutting, and the subclasses thereunder.
78—METAL FORGING AND WELDING, subclass 45, Forging, Toothed articles.

29. **SAW-MAKING, TOOTH-FORMING, DIE-CUTTING.** Machines for notching the blank to form saw-teeth by means of a cutting-die or punch.

Search Classes—

- 76—METAL TOOLS AND IMPLEMENTS, MAKING, subclass 30, Saw-making, Sharpening and gumming, Die-cutting.
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 50, Cutting machines, Reciprocating cutter, Notched work, and 64, Cutting, Machines, Rotary cutter, Notched work.

30. **SAW-MAKING, SHARPENING AND GUMMING, DIE-CUTTING.** Machines which remove the metal at the bases of saw-teeth to lengthen the teeth by means of a die-cutter or punch.

Search Classes—

- 76—METAL TOOLS AND IMPLEMENTS, MAKING, subclass 29, Saw-making, Tooth-forming, Die-cutting.
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 50, Cutting, Machines, Reciprocating cutter, Notched work, and 64, Cutting, Machines, Rotary cutter, Notched work.

31. **SAW-MAKING, SHARPENING AND GUMMING, RECIPROCATING TOOL.** Machines for sharpening saws in which a file or sharpening-tool is positively guided in its reciprocation across the saw. The patents in this subclass are mainly hand-operated devices.

32. **SAW-MAKING, SHARPENING AND GUMMING, RECIPROCATING TOOL, GIN-SAWS.** Machines provided with reciprocating sharpening-tools especially adapted to sharpen gin-saws. These machines are usually characterized by crossed files.

NOTE.—Machines for sharpening gin-saws by means of a rotary file or grinder are classified in this class subclass 37, Saw-making, Sharpening and gumming, Rotating tool, and subclasses thereunder.

33. **SAW-MAKING, SHARPENING AND GUMMING, RECIPROCATING TOOL, TRAVELING TOOL-CARRIAGE.** Machines for sharpening the teeth of saws by means of a reciprocating file or tool in which the carriage supporting the filing mechanism is automatically moved forward as the successive teeth are sharpened.

NOTE.—Machines in which the carriage is fed forward by hand are classified in this class, subclass 31, Saw-making, Sharpening and gumming, Reciprocating tool.

34. **SAW-MAKING, SHARPENING AND GUMMING, RECIPROCATING TOOL, CLAMP-FEED.** Machines in which the saw-teeth are sharpened by a reciprocating file or tool and which are provided with automatic means for feeding the saw-clamp forward as the successive teeth are sharpened.

Search Class—

- 76—METAL TOOLS AND IMPLEMENTS, MAKING, subclass 76, Saw-making, Feeding, Clamp-feed for clamp-feeding mechanism.

35. **SAW-MAKING, SHARPENING AND GUMMING, RECIPROCATING TOOL, TOOTH-ENGAGING FEED.** Machines in which the saw-teeth are sharpened by a reciprocating file or tool and which are provided with means for engaging the teeth of the saw and feeding it forward as the successive teeth are sharpened.

36. **SAW-MAKING, SHARPENING AND GUMMING, RECIPROCATING TOOL, FILE-HOLDERS AND GUIDES.** File-holders having guides or indicators attached to and carried by the file in its movement which show to the operator the angle at which the file is being held.

NOTE.—Guides supported by the saw-clamp are classified in this class, subclass 31, Saw-making, Sharpening and gumming, Reciprocating tool.

Search Class—

- 29—METAL-WORKING, subclass Filing, Files and rasps, Holders.

37. **SAW-MAKING, SHARPENING AND GUMMING, ROTATING TOOL.** Miscellaneous machines which sharpen the teeth of saws by means of a rotary file, milling-tool, or abrading-tool, not classifiable in the following subclasses.

38. **SAW-MAKING, SHARPENING AND GUMMING, ROTATING TOOL, SPIRAL.** Machines which sharpen the teeth of saws by means of a helical or spiral file, cutter, or abrading device.

Search Class—

- 90—GEAR-CUTTING, MILLING, AND PLANING, subclass 4, Gear-cutting, Rotating cutter, Helical gears for analogous machines.

39. **SAW-MAKING, SHARPENING AND GUMMING, ROTATING TOOL, SWITCH-CAM FEED.** Machines which sharpen saws by means of a rotary file or abrading-disk having oblique or helical ribs adapted to engage the teeth of the saw for the purpose of feeding the saw forward. The disks or cutters in this class of machines usually have a section broken away to permit the feeding of the saw.

CLASS 76—Continued.

40. **SAW-MAKING, SHARPENING AND GUMMING, ROTATING TOOL, PIVOTED GATE.** Machines for sharpening the teeth of saws in which a rotary file or abrading-tool carried by a pivoted gate or bracket is adapted to be swung toward and from the saw-blade.

41. **SAW-MAKING, SHARPENING AND GUMMING, ROTATING TOOL, SLIDING GATE.** Machines for sharpening the teeth of saws in which a rotary file or abrading-tool supported upon a sliding gate is adapted to be reciprocated toward and from the saw-blade.

42. **SAW-MAKING, SHARPENING AND GUMMING, ROTATING TOOL, PIVOTED SAW-CARRIAGE.** Machines for sharpening the teeth of saws by means of a rotating file, cutter, or abrading-tool in which the saw is supported upon a pivoted carriage and adapted to be swung against the rotating tool.

43. **SAW-MAKING, SHARPENING AND GUMMING, ROTATING TOOL, SLIDING SAW-CARRIAGE.** Machines for sharpening saws by means of a rotating file, cutter, or abrading-tool in which the saw is supported upon a sliding carriage and is adapted to be reciprocated into contact with the rotating tool.

44. **SAW-MAKING, SHARPENING AND GUMMING, ROTATING TOOL, MILLING.** Machines which remove the metal at the bases of saw-teeth to lengthen the teeth by means of milling-cutters. This subclass also includes machines having annular cutters.

45. **SAW-MAKING, SHARPENING AND GUMMING, ROTATING TOOL, DISKS AND CUTTERS.** Filing, grinding, or other disks or cutters especially adapted for sharpening and gumming saw-teeth. This subclass includes spiral files.

Search Classes—

- 29—METAL-WORKING, subclass 103, Cutters, Rotary.
143—WOOD-SAWING, subclass 155, Saw-hanging, Circular saw.

46. **SAW-MAKING, DRESSING, JOINTING, AND GAGING.** Machines and implements in which devices for truing the teeth of saws by side-dressing or making the teeth of uniform length are combined with a gage which is adapted to determine the relative length of the teeth or the amount of set of the teeth.

47. **SAW-MAKING, DRESSING AND JOINTING.** Machines and implements for truing the teeth of saws, including side-dressing teeth, and making the teeth of uniform length.

Search Class—

- 76—METAL TOOLS AND IMPLEMENTS, MAKING, subclass 46, Saw-making, Dressing, jointing, and gaging.

48. **SAW-MAKING, DRESSING AND JOINTING, CIRCULAR SAW.** Devices specially adapted to true the teeth of circular saws in such a manner that the points of all the teeth will lie in the circumference of a circle; also devices for truing the sides of the teeth of saws.

49. **SAW-MAKING, DRESSING AND JOINTING, COMPRESSING.** Machines and implements for shaping and truing the points and sides of the teeth of saws by swaging. These machines are generally adapted to be used on circular saws.

50. **SAW-MAKING, DRESSING AND JOINTING, ROTARY TOOL.** Machines having rotary cutting or abrading devices for truing the points and sides of the teeth of saws.

51. **SAW-MAKING, SWAGING.** Miscellaneous implements, machines, and processes for widening the points of the teeth of saws, not classifiable in the following subclasses. This subclass also includes devices for "knocking down" the points of the teeth of saws.

52. **SAW-MAKING, SWAGING, PIVOTED SWAGE, LEVER-OPERATED.** Machines in which the swaging-tool is pivotally supported and is forced forward to swage the tooth by means of a lever or system of levers.

Search Class—

- 76—METAL TOOLS AND IMPLEMENTS, MAKING, subclass 63, Saw-making, Setting, Pivoted set, Lever-operated.

53. **SAW-MAKING, SWAGING, SLIDING SWAGE, LEVER-OPERATED.** Machines in which the swage is slidably mounted and is adapted to be forced forward to swage the tooth by means of a lever or a system of levers.

Search Class—

- 76—METAL TOOLS AND IMPLEMENTS, MAKING, subclass 68, Saw-making, Setting, Sliding set, Lever-operated.

54. **SAW-MAKING, SWAGING, CAM-SWAGE.** Machines for widening the points of the teeth of saws by means of cam-faced swages, the swages being in many instances provided with rollers. These machines are used for sharpening or renewing the teeth of saws. This subclass also includes cam-swaging machines for "knocking down" the points of teeth and for swaging the raker-teeth of crosscut-saws.

55. **SAW-MAKING, SWAGING, IDLE SWAGE.** Machines for swaging the teeth of saws in which the tooth is supported upon an anvil and a punch normally supported in proper position over the anvil, usually by a spring, is adapted to be struck by a hammer.

Search Class—

- 76—METAL TOOLS AND IMPLEMENTS, MAKING, subclasses 65, Saw-making, Setting, Pivoted set, Idle, and 70, Saw-making, Setting, Sliding set, Idle.

CLASS 76—Continued.

56. **SAW-MAKING, SWAGING, TOOLS.** Implements for swaging the teeth of saws, usually "punches," having properly-formed swaging-faces adapted to be held in the hand and struck by a hammer; also tools for "knocking down" the points of the saw-teeth.
57. **SAW-MAKING, SWAGING, ANVILS.** Specially-formed anvils upon which the saw tooth is held by means of clamps or otherwise and the tooth swaged by being struck with a hammer or a punch held in the hand.
- Search Class—**
76—METAL TOOLS AND IMPLEMENTS, MAKING, subclass 73, Saw-making, Setting, Anvil set.
76—METAL FORGING AND WELDING, subclass 6, Forging, Anvils, Special work.
58. **SAW-MAKING, SETTING.** Miscellaneous machines, implements, and processes for bending the teeth of saws laterally in order to give proper clearance in the cut or kerf made by the saw.
59. **SAW-MAKING, SETTING, ROTARY SET.** Machines in which the teeth of the saw are given set by means of a rotary set—as, for example, toothed or corrugated rolls or disks.
60. **SAW-MAKING, SETTING, SCREW-OPERATED SET.** Machines in which the tooth-setting devices are forced into engagement with the teeth by means of a screw.
61. **SAW-MAKING, SETTING, PIVOTED SET, MULTIPLE.** Instruments having pivotally-mounted sets adapted to act upon a plurality of teeth simultaneously. They are usually for simultaneously bending adjacent teeth in opposite directions.
- Search Class—**
76—METAL TOOLS AND IMPLEMENTS, MAKING, subclass 66, Saw making, Setting, Sliding set, Multiple.
62. **SAW-MAKING, SETTING, PIVOTED SET, TRIP.** Machines in which the set or punch is carried by a pivoted arm, usually spring-actuated, and adapted to be operated by a trip dog or cam.
- Search Class—**
76—METAL TOOLS AND IMPLEMENTS, MAKING, subclasses 15, File-cutting, Trip-operated cutter, and 67, Saw-making, Setting, Sliding set, Trip.
63. **SAW-MAKING, SETTING, PIVOTED SET, LEVER-OPERATED.** Machines in which the set or punch is carried by a lever-operated pivoted arm and is adapted to bend the tooth against a properly-formed anvil.
- Search Class—**
76—METAL TOOLS AND IMPLEMENTS, MAKING, subclasses 52, Saw-making, Swaging, Pivoted swage, Lever-operated, and 68, Saw-making, Setting, Sliding set, Lever-operated.
64. **SAW-MAKING, SETTING, PIVOTED SET, LEVER-OPERATED, PLIERS.** Hand implements in the form of pliers in which the set or punch is carried by a pivoted arm which is actuated by one of the plier-handles.
- Search Class—**
76—METAL TOOLS AND IMPLEMENTS, MAKING, subclass 69, Saw-making, Setting, Sliding set, Lever-operated, Pliers.
65. **SAW-MAKING, SETTING, PIVOTED SET, IDLE.** Machines in which a set or punch carried upon a pivoted arm is adapted to be struck by a hammer to give set to a tooth held upon a properly-formed anvil.
- Search Class—**
76—METAL TOOLS AND IMPLEMENTS, MAKING, subclasses 55, Saw-making, Swaging, Idle swage, and 70, Saw-making, Setting, Sliding set, Idle.
66. **SAW-MAKING, SETTING, SLIDING SET, MULTIPLE.** Machines and implements having slidably-mounted sets adapted to act upon a plurality of teeth simultaneously. These devices are usually for simultaneously bending adjacent teeth in opposite directions.
- Search Class—**
76—METAL TOOLS AND IMPLEMENTS, MAKING, subclass 61, Saw-making, Setting, Pivoted set, Multiple.
67. **SAW-MAKING, SETTING, SLIDING SET, TRIP.** Machines in which a slidably-mounted set, usually spring-actuated, is operated by a trip dog or cam.
- Search Class—**
76—METAL TOOLS AND IMPLEMENTS, MAKING, subclass 62, Saw-making, Setting, Pivoted set, Trip.
68. **SAW-MAKING, SETTING, SLIDING SET, LEVER-OPERATED.** Machines in which a set slidably supported is operated by a lever or a cam-lever to bend the tooth against a suitably-formed anvil.
- Search Class—**
76—METAL TOOLS AND IMPLEMENTS, MAKING, subclass 63, Saw-making, Setting, Pivoted set, Lever-operated.
69. **SAW-MAKING, SETTING, SLIDING SET, LEVER-OPERATED, PLIERS.** Hand implements in the form of pliers in which a slidably-mounted set is actuated by one of the pivoted handles.
- Search Class—**
76—METAL TOOLS AND IMPLEMENTS, MAKING, subclass 64, Saw-making, Setting, Pivoted set, Lever-operated, Pliers.

CLASS 76—Continued.

70. **SAW-MAKING, SETTING, SLIDING SET, IDLE.** Machines in which a set slidably supported, usually by means of a spring, is adapted to be struck by a hammer to give set to a tooth held upon a suitably-formed anvil.
- Search Class—**
76—METAL TOOLS AND IMPLEMENTS, MAKING, subclasses 55, Saw-making, Swaging, Idle swage, and 65, Saw-making, Setting, Pivoted set, Idle.
71. **SAW-MAKING, SETTING, SPRING SET.** Machines and implements having means for engaging or embracing the tooth, the lateral (or oscillating) movement of the device serving to bend the tooth to the proper set without the co-operation of an anvil.
72. **SAW-MAKING, SETTING, SWAGE SET.** Machines and implements in which the tooth is bent by means of a wedge-shaped punch or swaging device.
73. **SAW-MAKING, SETTING, ANVIL SET.** Bevel-faced anvils upon which the saw is laid and the teeth bent to conform to the beveled face of the anvil by being struck by a manually-operated hammer.
- Search Class—**
76—METAL TOOLS AND IMPLEMENTS, MAKING, subclass 57, Saw-making, Swaging, Anvils.
74. **SAW-MAKING, GUIDES.** Devices adapted to support and guide saws to sharpening, dressing, or setting mechanisms. These guides are usually used to support band-saws.
- Search Class—**
143—WOOD-SAWING, subclass 160, Saw-guides.
75. **SAW-MAKING, FEEDING.** Mechanisms adapted to feed the saw-blank or saw to mechanisms for operating upon the same, not classifiable in the following subclasses.
76. **SAW-MAKING, FEEDING, CLAMP-FEED.** Mechanisms for feeding a clamp which holds the saw or saw-blank to the devices which operate upon the saw blade or teeth.
- Search Class—**
76—METAL TOOLS AND IMPLEMENTS, MAKING, subclasses 22, File-cutting, Feeding, and 34, Saw-making, Sharpening and gumming, Reciprocating tool, Clamp-feed.
77. **SAW-MAKING, FEEDING, TOOTH-ENGAGING FEED.** Mechanisms for feeding the saw to the devices which operate upon the saw handle or teeth, which comprise a reciprocating pawl or other means for engaging successive teeth of the saw to feed the saw forward.
- Search Class—**
76—METAL TOOLS AND IMPLEMENTS, MAKING, subclass 35, Saw-making, Sharpening and gumming, Reciprocating tool, Tooth-engaging feed.
78. **SAW-MAKING, CLAMPS.** Clamps and vises for holding saws during their manufacture or while being sharpened, set, etc.
- Note.**—Vises for general use are classified in class 81, Tools.
79. **SAW-MAKING, CLAMPS, CENTER-SUPPORTS.** Clamps and vises for holding circular saws during their manufacture or while being sharpened. Includes, mainly, clamps applied to the center of the saw, but also includes other forms of clamps having special attachments for centering the saw.
- Search Class—**
143—WOOD-SAWING, subclass 155, Saw-hanging, Circular saw.
80. **SAW-MAKING, TOOTH-INSERTERS.** Tools especially adapted for inserting and extracting saw-teeth.
81. **SAW-MAKING, GAGES.** Devices for determining the amount of set given to a saw-tooth. Also devices for gaging the clearance of the raker-teeth, the latter in many instances including filing-guides.
- Search Class—**
76—METAL TOOLS AND IMPLEMENTS, MAKING, subclass 46, Saw-making, Dressing, jointing, and gaging.
82. **CUTTING SHARPENERS.** Miscellaneous devices and machines for sharpening cutters by removing the material of the cutter adjacent to the edge by cutting, filing, or chipping, as distinguished from abrading or swaging. There are a few patents for scissor-sharpeners, the action of which is somewhat analogous to swaging sharpeners.
- Note.**—Swaging sharpeners are classified in class 29, METAL-WORKING, subclass 83, Sharpening, Swaging.
 Devices for serrating the edges of cutters are classified in class 29, METAL-WORKING, subclass 82, Sharpening, Edge-serrating.
 Machines and devices for sharpening cutters by grinding are classified in class 51, GRINDING AND POLISHING.
83. **CUTTING SHARPENERS, SKATE.** Devices especially adapted to sharpen skates.
84. **CUTTING SHARPENERS, BUTCHERS' STEELS.** The title is self-explanatory.
85. **CUTTING SHARPENERS, ROTARY.** Disk-sharpening devices, including cutting or filing tools, adapted to be rotated about the disk or against which the disk is rotated. This subclass comprises, mainly, devices for sharpening harrow-disks.

CLASS 76—Continued.

Search Classes—

- 29—METAL-WORKING, subclass 83, Sharpening, Swaging, for devices for sharpening harrow-disks, etc., by swaging by rolls or otherwise.
- 51—GRINDING AND POLISHING, subclass 7, Metal, Edge-tools, for devices for sharpening disks by grinding.
86. CUTTING SHARPENERS, MULTIPLE CUTTER, CONVERGING. Devices comprising a plurality of converging cutting or filing blades, the article to be sharpened being passed between them, thereby having stock removed from both sides of the blade adjacent to the edge thereof.
- Search Class—
- 51—GRINDING AND POLISHING, subclass 1, Abrading materials and tools.
87. CUTTING SHARPENERS, MULTIPLE CUTTER, CONVERGING, DISKS. Devices comprising a plurality of cutting disks or files, such disks being arranged in such a manner that the circumferences of the disks are tangent to the same line or overlap one another.
- Search Class—
- 51—GRINDING AND POLISHING, subclass 1, Abrading materials and tools.
88. CUTTING SHARPENERS, CUTTER AND GUIDE. Devices for sharpening cutters comprising an edged blade or a file against which the article to be sharpened is directed by means of a guide usually angularly disposed relative to the blade.
- Search Class—
- 51—GRINDING AND POLISHING, subclass 1, Abrading materials and tools.
89. CUTTING SHARPENERS, CUTTER AND GUIDE, DISK. Devices for sharpening cutters in which the article to be sharpened is directed against a disk cutter or file by means of a guide.
- Search Class—
- 51—GRINDING AND POLISHING, subclass 1, Abrading materials and tools.
90. DIES. Miscellaneous dies used in the manufacture of metal tools and implements.
91. DIES, AUGERS. Dies adapted to form auger-bits by a swaging or forging action.
- Note.—Dies for merely bending or twisting auger-bits are classified in class 153, METAL-BENDING, subclass 78, Twisting.
92. DIES, AXES, HAMMERS, AND HATCHETS. Dies adapted to form axes, adzes, hammers, hatchets, and like tools adapted to strike blows.
93. DIES, CUTLERY. Dies for forming various articles of cutlery, as knives, scissors, shears, etc.
94. DIES, CUTLERY, FORKS AND SPOONS. Dies adapted to form table forks or spoons.
95. DIES, DRILLS. Dies for forming metal-working drills, stone-working drills, etc.; also dies for reshaping or sharpening worn drills by swaging.
96. DIES, HOES, MATTOCKS, AND PICKS. Dies for forming digging-tools, adapted to strike blows, such as hoes, grub-hoes, picks, mattocks, etc.
- Note.—This subclass does not include dies for making toothed diggers having the function of a rake, which are classified in this class, subclass 97, Dies, Pitchforks and rakes.
97. DIES, PITCHFORKS AND RAKES. Dies for forming metal tools having teeth or tines, such as pitchforks, potato-forks, rakes, manure-hooks, etc.
98. DIES, PLIERS AND TONGS. Dies for forming the parts of tools for holding or bending objects known in the arts as pliers and tongs.
99. DIES, SHOVELS. Dies for forming metal digging implements having a single operating-blade, usually curved or dishd, such as shovels, spades, scoops, etc.

CLASS 76—Continued.

100. DIES, WRENCHES. Dies for forming the parts of wrenches, including dies for forming watch and clock keys.
101. BLANKS AND PROCESSES. Processes for making various tools and implements not classifiable in the following subclasses. It also includes specially-formed blanks to be used in the manufacture of tools and implements.
102. BLANKS AND PROCESSES, AUGERS. Processes for forming auger-bits, also blanks especially adapted to be made into augers.
103. BLANKS AND PROCESSES, AXES, HAMMERS, AND HATCHETS. Processes for making the heads of axes, adzes, hammers, and hatchets (mainly woodworking-tools), also blanks specially adapted to be made into such tools.
104. BLANKS AND PROCESSES, CUTLERY. Processes for making various articles of hardware commonly known as "cutlery," such as knives, scissors, shears, etc., excepting articles having hollow handles and forks and spoons, also blanks specially adapted to be made into such articles.
105. BLANKS AND PROCESSES, CUTLERY, FORKS AND SPOONS. Processes for making metallic table forks and spoons, also patents upon blanks specially adapted to be made into such articles.
- Note.—Processes for making metallic forks for heavy work are classified in this class, subclass 111, Blanks and processes, Pitchforks and rakes.
106. BLANKS AND PROCESSES, CUTLERY, HOLLOW HANDLES. Processes for making hollow handles of articles of cutlery, also making articles of cutlery having hollow handles, also blanks specially adapted to be formed into such articles.
107. BLANKS AND PROCESSES, DIES. Processes for forming dies for metal-forging machines, stencil-punching, sheet-metal shaping, metal-ornamenting, etc., also blanks from which such dies are made.
- Note.—This subclass does not include matrix-forming for printing, which is classified in class 198, MATRIX-MAKING.
108. BLANKS AND PROCESSES, DRILLS. Processes for forming drills, including metal drills, stone-working drills, etc.
109. BLANKS AND PROCESSES, HOES, MATTOCKS, AND PICKS. Processes for making hoes, mattocks, grub-hoes, or other hand digging-tools adapted to strike blows.
110. BLANKS AND PROCESSES, KEYS. Processes for making hand-operated lock-keys, also patents upon blanks for making keys.
- Note.—It does not include processes for making watch-keys, which are to be found in this class, subclass 114, Blanks and processes, Wrenches, nor does it include processes for making keys for holding pinions on shafts, etc.
111. BLANKS AND PROCESSES, PITCHFORKS AND RAKES. Processes for making metallic tools having teeth or tines to be used for heavy work, comprising pitchforks, manure-forks, garden-rakes, potato-rakes, etc.; also blanks specially adapted to be made into such articles.
112. BLANKS AND PROCESSES, SAWS. Processes for making saws, including forming saw-teeth, sharpening, gumming, stretching, and setting and patching saws, etc.; also blanks for saw-blades, patches for cracked blades, etc.
113. BLANKS AND PROCESSES, SHOVELS. Processes for making shovels, spades, scoops, etc., also blanks specially adapted to be made into such articles.
114. BLANKS AND PROCESSES, WRENCHES. Processes for making wrenches, including watch and clock keys, also blanks specially adapted to be made into such articles.

CLASS 77.—BORING AND DRILLING.

DEFINITIONS.

Class.

This class includes machines and devices for producing finished holes, usually circular in cross-section, by means of a rotating cutter and mainly in metal, though the class is not limited to metal-working. Boring, as the term is used in this class, is distinguished from drilling in that boring enlarges and trues a hole already existing, while drilling produces a hole in solid material.

Note.—Machines and tools for boring holes in wood are found in class 144, WOODWORKING, Boring; those for producing holes in stone are in class 125, STONE-WORKING, Drills, and for bone, ivory, mother-of-pearl, etc., in class 79, BUTTON-MAKING.

Subclasses.

BORING-MACHINES. Organized machines for enlarging rough holes—that is, holes previously cored or forged—as distinguished from drilling-machines in which the tool makes a hole in solid material. A further distinction, of degree only, is that boring-machines produce holes much larger in cross-section than do drilling-machines. Either tool or work may rotate.

1. **BORING-MACHINES, MISCELLANEOUS.** Machines for enlarging and finishing holes of circular cross-section not otherwise classified.

2. **BORING-MACHINES, PORTABLE.** Machines, mostly hand-driven, easily movable, and which are secured to the work to rebore worn surfaces or finish pieces of unwieldy size.

Search Class—

77—BORING AND DRILLING, subclasses 56, Appliances, Boring-bars, and 57, Appliances, Boring-bars, Feed devices.

3. **BORING-MACHINES, HORIZONTAL.** Machines in which the axis of the cutter-carrier is horizontally arranged.

4. **BORING-MACHINES, VERTICAL.** Machines in which the cutter-carrying axis is vertically arranged or in which a non-rotary cutter has a vertical travel while the work rotates.

DRILLING-MACHINES. Machines for producing holes of circular cross-section in solid material, usually by means of a rotating end-cutting tool.

5. **DRILLING-MACHINES, MISCELLANEOUS.** Machines for drilling metal and analogous material not otherwise classified.

6. **DRILLING-MACHINES, INDEPENDENT-MOTOR.** Machines in which the motor is directly connected to the machine-frame.

7. **DRILLING-MACHINES, PORTABLE.** Machines intended to be brought to the work or secured thereto, as distinguished from those placed on a foundation and supporting the work.

8. **DRILLING-MACHINES, PORTABLE, RAIL-DRILLS.** Machines for drilling railroad-rails in place upon the track.

9. **DRILLING-MACHINES, PORTABLE, RAIL-DRILLS, QUICK-SETTING.** Rail-drills in which either the securing means or spindle-driving means are readily detachable to permit the passage of trains.

10. **DRILLING-MACHINES, PORTABLE, RAIL-DRILLS, RATCHET.** Rail-drills in which the drill-spindle is rotated by pawl-and-ratchet mechanism.

Search Class—

77—BORING AND DRILLING, Ratchet-Drills, and subclasses thereunder, for this type of spindle-drive.

11. **DRILLING-MACHINES, PORTABLE, RAIL-DRILLS, CLAMP-FRAMES.** Frames for securing the drilling mechanism to the rail and for receiving the thrust of the feed-screw.

Search Class—

77—BORING AND DRILLING, subclass 10, Drilling-machines, Portable, Rail-drills, Ratchet.

12. **DRILLING-MACHINES, PORTABLE, CLAMPED, DRILLING AND TAPPING.** Drilling devices secured to the work, usually by a chain, and carrying a combined tool for drilling and threading a hole at one operation.

Note.—These devices differ from main-tapping machines in that there is no provision for preventing the flow of fluids from around the tool. They are equally well adapted for producing threaded bolt-holes in columns, etc.

13. **DRILLING-MACHINES, PORTABLE, CLAMPED.** Drilling devices which are secured to the work by screw-operated jaws or pointed screws, or miscellaneous securing devices.

14. **DRILLING-MACHINES, PORTABLE, CLAMPED, CHAIN.** Drilling devices secured to the work by a chain passing around the work and having tightening means at its ends.

CLASS 77—Continued.

15. **DRILLING-MACHINES, PORTABLE, FLEXIBLE-SHAFT.** Portable drills to which power is supplied through flexible shafting.

16. **DRILLING-MACHINES, PORTABLE, BOW.** Devices in which the drill-spindle is given rotations by a reciprocating bow and cord or analogous means.

17. **DRILLING-MACHINES, PORTABLE, CORD-AND-SPRING DRIVE.** Hand-drills in which the drill-spindle is rotated in the cutting direction by the pull of a cord, which movement also winds a spring, the spring upon release of the cord rotating the spindle in the reverse direction and recoiling the cord.

18. **DRILLING-MACHINES, CENTER DRILLS.** Machines for bringing lathe-work into axial alinement with a rotating tool or series of such tools, so as to drill and countersink its ends to receive the lathe-centers.

19. **DRILLING-MACHINES, BENCH.** Machines with light (usually hand) driving mechanisms and short frames designed to be attached to a work-bench.

20. **DRILLING-MACHINES, POST.** Light drills, usually hand-driven, adapted to be rigidly secured to an upright side post or column.

DRILLING-MACHINES, MULTIPLE-SPINDLE. Machines having a plurality of drill-spindles.

21. **DRILLING-MACHINES, MULTIPLE-SPINDLE, AXIALLY-OPPOSITE.** Multiple-spindle drills in which the spindles are in axial alinement and the drills cut toward each other from opposite sides of the work.

Search Classes—

79—BUTTON-MAKING, subclass 11, Pearl and composition, Multiple spindle, Axially opposite.

144—WOOD-WORKING, subclass 94, Boring-machines, Brush, Multiple bit.

22. **DRILLING-MACHINES, MULTIPLE-SPINDLE, PARALLEL AXES.** Machines in which the sets of spindles are arranged parallel to drill a number of holes in the same direction.

Search Class—

77—BORING AND DRILLING, subclass 18, Drilling-machines, Center drills.

23. **DRILLING-MACHINES, MULTIPLE-SPINDLE, PARALLEL AXES, CIRCULAR GANG.** Machines in which the parallel drill-spindles are arranged to drill holes in the circumference or a segment of the circumference of a circle.

24. **DRILLING-MACHINES, MULTIPLE-SPINDLE, PARALLEL AXES, INDEPENDENT ADJUSTMENT.** Machines in which one or more of the set of parallel drill-spindles can be laterally adjusted without disturbing the position of other spindles.

25. **DRILLING-MACHINES, MULTIPLE-SPINDLE, TURRET.** Machines in which the series of spindles are so arranged in a revolving frame that they can be brought successively into operative contact with a driving-spindle.

26. **DRILLING-MACHINES, MULTIPLE-SPINDLE, RADIAL AXES.** Machines in which the series of spindles direct the drills radially either toward or from a common center.

27. **DRILLING-MACHINES, RADIAL.** Machines with a swinging radial arm which permits the adjustment of the spindle to any position within a circle or a considerable sector of a circle.

28. **DRILLING-MACHINES, RADIAL, VERTICALLY-ADJUSTABLE ARM.** Radial drills in which the spindle-carrying arm is vertically movable on the central column.

29. **DRILLING-MACHINES, FRICTION-DRIVE.** Machines in which the spindle is rotated by either friction-disks or friction-clutches.

30. **DRILLING-MACHINES, TREADLE-FEED.** Machines in which the drill and work are made to approach by depressing a treadle.

31. **DRILLING-MACHINES, ANGULAR SPINDLE ADJUSTMENT.** Machines in which the rotating spindle is angularly adjusted with reference to the work and the main frame of the machine.

32. **DRILLING-MACHINES, FEED MECHANISMS.** Mechanisms for relatively moving the tool, the work, or both to produce a cut.

33. **DRILLING-MACHINES, FEED MECHANISMS, AUTOMATIC-STOP.** Feed mechanisms in which the relative movement of approach between tool and work is arrested or reversed when the tool has cut to a predetermined depth.

CLASS 77—Continued.

34. **DRILLING-MACHINES, FEED MECHANISMS, FRICTIONAL.** Feed mechanisms with a yielding frictional drive to prevent overfeed of the cutting-tool.
35. **DRILLING-MACHINES, BACK GEARS.** Shiftable gear-trains for changing the speed or direction of rotation, or both, of the tool-carrying spindle.
36. **DRILLING-MACHINES, COUNTERWEIGHTS.** Weights and suspension apparatus for counterbalancing the weight of drill-heads, spindles, and other vertically-moving parts of machines.
37. **TAPPING MAINS.** Portable devices for tapping gas and water mains under pressure.
Note.—Devices with no provision for arresting the flow of gas or water from the main will be found in subclass 14, Drilling-machines, portable, clamped, chain, and subclass 12, Drilling-machines, portable, clamped, drilling and tapping, or class 77, BORING AND DRILLING.
38. **TAPPING MAINS, CLOSED TOOL-CHAMBER.** Devices in which the escape of fluid is prevented by inclosing the cutting-tool in a tight chamber and operating it from without the chamber by suitable driving means.
39. **TAPPING MAINS, CLOSED TOOL-CHAMBER, MULTIPLE-TOOL HOLDER.** Devices in which the tool-chamber incloses a series of tools, with provision for bringing them successively into the same position to drill, thread, and close a hole in the main.
40. **TAPPING MAINS, CLOSED TOOL-CHAMBER, VALVED.** Devices in which the tool may be withdrawn to the rearward portion of the working chamber and the flow cut off by a valve to permit a change of tools.
41. **TAPPING MAINS, CLOSED TOOL-CHAMBER, VALVED, PERMANENT.** Devices, like the preceding, in which the valved chamber is permanently secured to the main and remains as the branch connection after the main is tapped.
42. **TAPPING MAINS, CLOSED TOOL-CHAMBER, VALVED, PERMANENT, ANNULAR CUTTER.** Devices, like the preceding, in which the cutting mechanism travels in an annular path and removes a large portion of the main wall entire in line with the branch connection. There is usually provision for preventing the piece severed from falling into the main.
- Search Classes—**
 77—BORING AND DRILLING, subclass 69, Drills, Annular.
 143—WOOD SAWING, subclass 85, Tubular saw machines.
 144—WOODWORKING, subclass 24, Special work machines, Single or combined, Disk cutting Sweep cutter.
 145—WOODWORKING TOOLS, subclass 121, Augers, sweeps.
43. **RATCHET-DRILLS, COMBINATION.** Hand lever drills of the general ratchet-and-pawl type having combined with or readily substituted for the drill-socket means for performing some other function, such as tightening nuts, cutting threads, etc.
44. **RATCHET-DRILLS.** Hand-driven devices in which the spindle is intermittently rotated by a lever operating a ratchet and pawl or some intermittently-gripping device analogous to a ratchet and pawl.
- Search Classes—**
 77—BORING AND DRILLING, subclass 10, Drilling machines, Portable, Rail drills.
 74—MACHINE ELEMENTS, subclass 16, Pawls and ratchets.
 81—TOOLS, subclasses 53, Wrenches, Clutched head, and 63, Wrenches, Clutched head, Ratchet, Pivoted pawl, Reversing, Single.
 145—WOODWORKING TOOLS, subclass 70, Bit stocks, Ratchet.
45. **RATCHET-DRILLS, SELF-FEEDING.** Devices in which the feed is operated by frictional means or by the same oscillations of the driving-lever which rotate the drill-spindle.
46. **RATCHET-DRILLS, DOUBLE-ACTING, AXIALLY-SWINGING LEVER.** Lever-drills in which the driving-lever swings in the plane of the drill-axis or one parallel thereto and produces a partial rotation of the spindle when swung in either direction.
47. **RATCHET-DRILLS, DOUBLE-ACTING, TRANSVERSELY-SWINGING LEVER.** Devices with a forward drive of the spindle for either forward or backward swing of the lever, the lever moving in a plane approximately at right angles to the drill-spindle axis.
48. **RATCHET-DRILLS, REVERSIBLE.** Devices in which the direction of rotation of the drill-spindle may be reversed—usually by manipulation of the driving pawl or pawls.
49. **RATCHET-DRILLS, AXIALLY-YIELDING CLUTCH.** Hand-lever drills in which the driving and driven members of the gripping device separate in the direction of the axis of the drill-spindle to secure a new driving position.
50. **RATCHET-DRILLS, BAND-GRIP.** Drilling devices in which a jointed or yielding band surrounding the drill-spindle is alternately tightened and released by the driving and return movements of the hand-lever.
51. **RATCHET-DRILLS, SLIDING-PAWL.** Devices in which the pawl moves to and from the ratchet in the direction of its length instead of about a pivot.

CLASS 77—Continued.

52. **RATCHET-DRILLS, WEDGING-PAWL.** Devices in which the positively-driving pawl acting on serrations of the ratchet is replaced by irregular pieces which grip by being canted or by being moved forward between approaching surfaces and are released on the backward stroke.
53. **RATCHET-DRILLS, WEDGING-PAWL, ROLLER-GRIP.** Devices, like the preceding, in which wedges constitute a system of rollers between surfaces against which they wedge on the working stroke and from which they are released on the backward stroke.
54. **RATCHET-DRILLS, FEED-SCREWS.** Spindle-advancing screws adapted to ratchet-drills and arranged to bear at one end upon the spindle-axis and at the other upon a backing-piece.
55. **APPLIANCES.** Devices other than complete machines for driving, handling, and guiding tools or for supporting or securing the work.
56. **APPLIANCES, BORING-BARS.** Bars supported on centers and carrying a cutter or cutters intermediate the ends for enlarging and truing to circular cross-section and uniform or varying longitudinal sections openings already made in the work by boring or otherwise.
- Search Class—**
 77—BORING AND DRILLING, subclass 2, Boring-machines, Portable.
57. **APPLIANCES, BORING-BARS, FEED DEVICES.** Mechanisms for giving the cutter of a boring-bar either axial or lateral movement with relation to the bar.
- Search Class—**
 77—BORING AND DRILLING, subclass 2, Boring-machines, Portable.
58. **APPLIANCES, BORING-HEADS.** Cutting devices differing from boring-bars in being supported at but one end and carrying the cutter at or near the other.
59. **APPLIANCES, DRILL-BRACES.** Devices attached to the work to support the drilling mechanism and receive the thrust of the feed-screw.
60. **APPLIANCES, DRILL-HOLDERS.** Devices for surrounding the tang or shank of a drill to prevent its rotation when used in a lathe.
61. **APPLIANCES, NON-CIRCULAR CUT.** Coöperating cutters and templates or organized attachments for producing holes of various cross-sections other than circular.
- Search Class—**
 145—WOODWORKING-TOOLS, subclass 122, Augers, Square-hole cutters.
62. **APPLIANCES, JIGS.** Miscellaneous devices specially adapted to guide drills for securing precision in the size, direction, and location of drilled holes.
63. **APPLIANCES, WORK-SUPPORTS.** Tables, centers, vises, etc., for supporting and securing work while being drilled.
- Search Classes—**
 77—BORING AND DRILLING, subclass 18, Drilling-machines, Center drills.
 144—WOODWORKING, subclass 92, Boring.
64. **APPLIANCES, WORK-SUPPORTS, INDEXING.** Work-supports which are adapted to move the work-piece in such a manner that holes may be drilled at predetermined circumferential or linear distances apart.
- Search Classes—**
 73—MEASURING INSTRUMENTS, subclass 13, Dividing engines.
 90—GEAR CUTTING, MILLING, AND PLANING, subclasses 56, Indexing, and 57, Indexing, Index heads.
65. **DRILLS, COMBINED.** Cutters in which the piercer or drill is combined with a facing-tool, reamer, or similar secondary cutter.
66. **DRILLS, COMBINED, DRILLS AND COUNTERSINKS.** Cutters in which the piercer is combined with a secondary cutter for producing a conical depression surrounding the drill-hole.
- Search Class—**
 145—WOODWORKING-TOOLS, subclasses 123, Augers, Countersinks, and 125, Augers, Secondary cutters.
67. **DRILLS.** The immediate cutting portion of the drilling mechanism having cutting edges or "lips" for cutting on its advancing end.
68. **DRILLS, OIL CONDUIT.** Cutting-tools having a groove or tube to conduct lubricants to the cutting-lip of the drill; also, oiling-sockets for such drills.
69. **DRILLS, ANNULAR.** Cutters which remove the metal in an annular path, detaching a central core or disk entire.
- Search Classes—**
 77—BORING AND DRILLING, subclass 42, Tapping mains, Closed tool chamber, Valved, Permanent, Annular cutter.
 79—BUTTON MAKING, subclass 16, Pearl and composition, Blank sawing, Tubular saw.
 143—WOOD SAWING, subclass 85, Tubular saw machines.
 144—WOODWORKING, subclass 24, Special work machines, Single or combined, Disk cutting, Sweep cutter.
 145—WOODWORKING TOOLS, subclass 121, Augers, Sweeps.

CLASS 77—Continued.

70. DRILLS, TWIST. Cutters having helical chip-discharging grooves.
71. DRILLS, TANGS. Cutters showing special means for fastening them in the socket of the driving-spindle.
72. REAMERS. Rotating cutting devices with substantially longitudinal cutting edges converging at the forward end for removing small cuts to smooth and size or shape a hole. They are to be distinguished from boring-heads and other boring-cutters in that they are incapable of taking heavy cuts.
73. REAMERS, PIPE-BUR. Devices for removing from the interior of pipes the bur thrown up by the pipe-cutter.
- 73.5. REAMERS, COUNTERSINKS. Devices primarily adapted for producing and finishing depressions about the mouth of a hole.

26674°—12—10

CLASS 77—Continued.

74. ABOLISHED.
75. REAMERS, ADJUSTABLE. Reamers provided with means for varying the position of the cutting edges.
- 75.5. REAMERS, ADJUSTABLE, WEDGE. Adjustable reamers in which the separation of parts is secured by the insertion between them of a structure utilizing the wedge principle and having a rectilinear movement in a direction transverse to the direction of separation. The wedge structure may be integral with one or more of the parts to be separated.
76. REAMERS, ADJUSTABLE, WEDGE, CENTRAL CONE. Adjustable reamers in which the movable parts are separated by central cones, which have a possible rotary as well as a longitudinal movement relative to the movable parts.
77. ABOLISHED. See subclass 73.5.

CLASS 78.—METAL FORGING AND WELDING.

DEFINITIONS.

Class.

This class includes apparatus and processes in general for performing those metal-working operations known as "forging and swaging," and "welding."

The term "forging" as used in this class means shaping metal while in a self-sustaining condition by distorting it by direct pressure or impact, thereby changing its cross-section without general molecular disintegration and rearrangement.

Search Classes—

80—METAL-ROLLING, for shaping metal by rolls while in a self-sustaining condition.

113—SHEET-METAL WARE, MAKING, subclass 38, Die shaping, and the subclasses thereunder, for shaping sheet metal by distortion, as in die drawing.

153—METAL-BENDING, for shaping metal by mere bending operations.

207—PLASTIC-METAL WORKING, for shaping metal while in either a molten or a solid condition by distorting it by direct pressure, thereby causing considerable molecular disintegration or rearrangement, and also for shaping molten metals by rolls.

219—ELECTRIC HEATING AND RHEOSTATS, subclass 1, Metal heating and working, and the subclasses thereunder, for working metals heated by electricity.

The term "welding" as used in this class means general welding not provided for elsewhere, including welding self-sustaining, usually heated masses by pressure.

Search Classes—

22—METAL-FOUNDING, especially subclass 190, Processes, and the subclasses thereunder, for welding by casting one metal onto another.

113—SHEET-METAL WARE, MAKING, subclass 59, Soldering, and the subclasses thereunder, for welding by fusion without pressure and without casting.

205—METAL-DRAWING, subclass 9, Tube welding, and the subclasses thereunder, for welding pipe by drawing through dies.

219—ELECTRIC HEATING AND RHEOSTATS, subclass 1, Metal heating and working, and the subclasses thereunder, for welding metals while heated by electricity.

Combination-machines performing operations other than forging or welding and handling the work are classified in class 29, METAL-WORKING, or the appropriate art classes.

Subclasses.

1. FORGING. Miscellaneous apparatus and processes for forging and swaging. The allied tire-upsetting and riveting devices are included. Patents for the combination of motors and power hammers and presses are included.

2. ABOLISHED.

3. FORGING, ANVIL-VISES. Combined anvils and vises, distinguished from devices included in subclass 8, Forging, Anvils, Attachments, Vises, by the fact that they involve mutual adaptation of the anvil and vise.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 22, Bolt and rivet making, Anvils.

4. FORGING, ANVIL-VISES, FOOT. Anvil-vises that include foot-operated means for closing the vise-jaws.

5. FORGING ANVILS. Miscellaneous supports for metal articles while being hammered.

Search Class—

78—METAL FORGING AND WELDING, subclass 44, Forging, Power hammers and presses, Anvils.

6. FORGING, ANVILS, SPECIAL WORK. Anvils which are designed for hand-forging of particular articles or articles of particular shape. Such anvils are not adapted for general work.

7. FORGING, ANVILS, ATTACHMENTS. Attachments which may be applied to the blacksmith's anvil. Ordinarily no material modification of the anvil is necessary.

8. FORGING, ANVILS, ATTACHMENTS, VISES. Vise-jaws which may be applied to an anvil without material modification of the latter.

9. FORGING, BILLET-PIERCING. Machines and dies for punching a hole through or cavity in billets of metal by mere displacement of the molecules.

Search Class—

80—METAL ROLLING, subclass 13, Tubes, Axial rolling, for rotary piercing mills.

10. FORGING, BILLET-PIERCING, FIXED MANDREL. Billet-piercing machines in which the piercing-mandrel is fixed during the piercing operation, the billet being advanced.

CLASS 78—Continued.

11. FORGING, BILLET-PIERCING, ROTARY MANDREL OR BILLET. Billet-piercing machines in which the mandrel or billet is given rotary motion about its axis as well as longitudinal motion.

12. FORGING, BILLET-PIERCING, PROCESSES. Processes of punching billets by distortion or displacement.

13. FORGING, POWER HAMMERS AND PRESSES. Power hammers and presses for forging. Machines commonly known as "trip-hammers," "drop-hammers," "swaging-machines," etc.

14. FORGING, POWER HAMMERS AND PRESSES, PIPE-SWAGING. Machines for reducing the thickness of pipe-walls. They are usually of the hammer-anvil type, but are distinguished therefrom by the presence of a mandrel on which the work is supported.

15. FORGING, POWER HAMMERS AND PRESSES, SHRINKING. Machines for shrinking tires, hub-bands, etc., by hammering or pressing.

Search Class—

78—METAL FORGING AND WELDING, subclass 56, Forging, Tire-upsetting, and the subclasses thereunder.

16. FORGING, POWER HAMMERS AND PRESSES, SPOKE-SECURING. Devices and organized machines for securing wheel-spokes in the hub or felly either by upsetting the spoke or compressing the hub or felly.

Search Class—

29—METAL-WORKING, appropriate art subclasses for machines for performing this and additional operations.

17. FORGING, POWER HAMMERS AND PRESSES, UPSETTING. Devices for changing the cross-section of metal by blows or pressure applied longitudinally of the blank.

18. FORGING, POWER HAMMERS AND PRESSES, DIE-INCLOSED WORK. Presses in which the material, generally hot, is held in a die, generally sectional, and is operated on by a plunger closely fitting the portion of the die in which it works, thereby causing the material to fill the die.

19. FORGING, POWER HAMMERS AND PRESSES, TRAVELING. Power-hammers provided with means whereby they may be moved. Portability by reason of mere size is not enough to put a device in this class.

20. FORGING, POWER HAMMERS AND PRESSES, HAMMER-ANVIL. Includes those machines known as "swaging-machines." There is no fixed anvil, but the work is forged by oppositely-moving hammers operating simultaneously on opposite sides. Generally more than one such pair of hammers are provided. Contains also heavy forging-machines employing a hammer-anvil.

21. FORGING, POWER HAMMERS AND PRESSES, HAMMER-ANVIL, CAM-OPERATED. Machines in which the hammers are operated by tappets and generally slide in guides. Generally the hammers and tappets are carried by concentric heads, one of which rotates.

22. FORGING, POWER HAMMERS AND PRESSES, HAMMER-ANVIL, CAM-OPERATED, ADJUSTABLE DIES. Machines including dies adjustable so as to vary the limit of their stroke.

23. FORGING, POWER HAMMERS AND PRESSES, HAMMER-ANVIL, HELVED. Machines in which hammers or dies are operated by a lever or helve intermediate them and the actuator.

24. FORGING, POWER HAMMERS AND PRESSES, MULTIPLE-HAMMER. Machines having a fixed anvil or die and plurality of hammers operating successively or simultaneously on the work.

25. FORGING, POWER HAMMERS AND PRESSES, DROP. Hammers raised by mechanical means, released, and permitted to fall by the action of gravity or a spring, and special accessories.

26. FORGING, POWER HAMMERS AND PRESSES, DROP, CAM-LIFT. Drop-hammers in which a rotating cam raises the hammer-head. Under the term "cam" are included "wipers," "tappets," and similar means.

27. FORGING, POWER HAMMERS AND PRESSES, DROP, CAM-LIFT, SLIDING-HEAD. Drop-hammers of the cam-lift type in which the hammer-head moves in guides with which it has sliding contact.

28. FORGING, POWER HAMMERS AND PRESSES, DROP, CRANK-LIFT. Drop-hammers in which the hammer is lifted by a crank and connecting-rod. Under the term "crank" eccentrics are included.

CLASS 78—Continued.

29. **FORGING, POWER HAMMERS AND PRESSES, DROP, FRICTION-LIFT.** Drop-hammers in which the hammer-head is raised by friction-rollers engaging with a rod or bar connected to the hammer-head. The hammer-head is released by releasing the frictional contact of the rollers and bar.
30. **FORGING, POWER HAMMERS AND PRESSES, DROP, WINDING-LIFT.** Drop-hammers in which the head is raised by a flexible connector which can be caused to frictionally engage a rotating pulley.
31. **FORGING, POWER HAMMERS AND PRESSES, HELVED.** Power hammers and presses in which the hammer-head is carried by a pivoted helve or lever.
- Search Class—**
78—METAL FORGING AND WELDING, subclasses 23, Forging, Power hammers and presses, Hammer-anvil, Helved, and 26, Forging, Power hammers and presses, Drop, Cam-lift.
32. **FORGING, POWER HAMMERS AND PRESSES, HELVED, CRANK-OPERATED.** Helved power hammers and presses in which the helve is operated by a connecting-rod and crank.
33. **FORGING, POWER HAMMERS AND PRESSES, HELVED, OLIVERS.** Helved hammers that are held in an elevated position, as by a spring or counterweight, and with which the blow is struck by hand or foot operated means.
34. **FORGING, POWER HAMMERS AND PRESSES, REVOLVING-HAMMER.** Power hammers and presses in which one or more hammers are connected to a part which by rotation carries the hammers into contact with the work.
35. **FORGING, POWER HAMMERS AND PRESSES, SCREW-OPERATED.** Power hammers and presses in which the hammer or press head is brought into engagement by means of a screw. Such devices are included whether the head be controlled by guides or be free.
36. **FORGING, POWER HAMMERS AND PRESSES, SLIDING-HEAD.** Miscellaneous power hammers and presses in which a positively-actuated head reciprocates in guides.
Note.—Those in which the head is directly operated by a screw or fluid-operated piston are classified, respectively, in this class, subclass 35, Forging, Power hammers and presses, Screw-operated head, and subclass 42, Forging, Power hammers and presses, Fluid-operated.
37. **FORGING, POWER HAMMERS AND PRESSES, SLIDING-HEAD, ADJUSTABLE GUIDES.** Sliding-head power hammers and presses having adjustable guides in which the head slides.
38. **FORGING, POWER HAMMERS AND PRESSES, SLIDING-HEAD, CAM-OPERATED.** Sliding-head power hammers and presses in which the sliding head is actuated to deliver the blow by a cam or tappets.
39. **FORGING, POWER HAMMERS AND PRESSES, SLIDING-HEAD, CRANK-OPERATED.** Sliding-head power hammers and presses in which the head is operated by means of a crank and connecting-rod.
40. **FORGING, POWER HAMMERS AND PRESSES, SLIDING-HEAD, CRANK-OPERATED, CUSHIONED.** Power hammers and presses in which the head is operated by a crank and pitman, the latter being provided with some means, such as a spring or cylinder and piston, for cushioning the blow delivered.
- Search Class—**
78—METAL FORGING AND WELDING, subclass 43, Forging, Power-hammers and presses, Cushioned elements.
41. **FORGING, POWER HAMMERS AND PRESSES, SLIDING-HEAD, TOGGLE-OPERATED.** Sliding-head power hammers and presses in which the head is operated by means of a toggle intermediate it and the actuating means.
42. **FORGING, POWER HAMMERS AND PRESSES, FLUID-OPERATED.** Power hammers and presses in which the hammer-head is directly operated by the piston of a fluid-operated motor.
Note.—Power hammers and presses in which the hammer-head is indirectly operated by fluid pressure are classified under the appropriate structural subclasses.
Note.—Improvements in the motor are classified in class 138, HYDRAULIC MOTORS, subclass 10, For presses, and subclasses thereunder; class 121, STEAM-ENGINES, subclass 19, Hammers, and subclasses thereunder, and in class 123, INTERNAL-COMBUSTION ENGINES, especially subclass 7, Hammers.
43. **FORGING, POWER HAMMERS AND PRESSES, CUSHIONED ELEMENTS.** Improvements in various elements of power hammers and presses, including anvils, whereby the blow of the machine is cushioned. Complete power-hammers employing cushioning means are classified in the appropriate structural subclass.
- Search Class—**
78—METAL FORGING AND WELDING, subclasses 32, Forging, Power hammers and presses, Helved, Crank-operated; 36, Forging, Power hammers and presses, Sliding-head, and 40, Forging, Power hammers and presses, Sliding-head, Crank-operated, Cushioned.

CLASS 78—Continued.

44. **FORGING, POWER HAMMERS AND PRESSES, ANVILS.** Improvements in the anvils of power-hammers.
- Search Class—**
78—METAL FORGING AND WELDING, subclass 6, Forging, Anvils, and subclasses thereunder for Anvils for hand-forging or blacksmiths' anvils.
- 44.5. **FORGING, POWER HAMMERS AND PRESSES, TOOL RETAINERS.** Devices for retaining the tool or die in hammers of the piston hammer type, usually permitting limited endwise movement.
- Search Classes—**
32—DENTISTRY, subclass 8, Pluggers, and the subclasses thereunder.
121—STEAM ENGINES, subclass 20, Hammers, Piston hammer.
173—ELECTRICITY, MOTIVE POWER, subclass 15, Dental instruments.
45. **FORGING, TOOTHED ARTICLES.** Means peculiarly adapted for forging toothed articles, such as milling-cutters, tapping-tools, etc.
46. **FORGING, RIVETING.** Machines, tools, and appliances for riveting, riveted joints, and processes of riveting.
47. **FORGING, RIVETING, CALKING.** Appliances for calking either the joint between the plates or the joint between the plate and rivet.
48. **FORGING, RIVETING, MACHINES.** Machines specially adapted for riveting.
Note.—Those power-hammers which are called "riveting-machines" simply because provided with rivet-heading dies are classified in subclass 13, Forging, Power hammers and presses or in subclasses thereunder.
- Search Class—**
218—BUTTON, EYELET AND RIVET SETTING, subclass 1, Machines, Riveting.
49. **FORGING, RIVETING, MACHINES, SPECIAL.** Riveting-machines not of general utility, but designed for riveting particular articles. In some of the machines the rivets are cut from wire, inserted, and headed. Other machines perform a part only of these operations, or use previously-formed rivets, or punch the rivet-hole and head the rivet.
50. **FORGING, RIVETING, MACHINES, WORK - SUPPORTED.** Riveting-machines provided with means whereby they are attached to and supported by the work to be riveted.
51. **FORGING, RIVETING, MACHINES, PIPE.** Riveting-machines which are especially adapted for riveting pipe, whether straight or spiral seamed.
52. **FORGING, RIVETING, MACHINES, PLATE-CLAMPING.** Riveting-machines which include means for clamping the plates together during the rivet-heading operation.
53. **FORGING, RIVETING, MACHINES, ROTATING-TOOL.** Machines in which the heading tool or die is rotated during the rivet-heading operation. Generally the tool has a reciprocating motion also.
54. **FORGING, RIVETING, RIVETED JOINTS.** Riveted joints of particular construction.
55. **FORGING, TIRE-UPSETTING.** Machines and devices for reducing the circumference of tires without cutting and welding.
- Search Classes—**
78—METAL FORGING AND WELDING, subclass 15, Forging, Power hammers and presses, Shrinking.
157—WHEELWRIGHT MACHINES, subclass 5, Tire setters.
56. **FORGING, TIRE-UPSETTING, CIRCUMFERENTIAL.** Belts, bands, or like flexible elements partially or entirely surrounding the tire and by means of which the tire is compressed.
57. **FORGING, TIRE-UPSETTING, PIVOTED-CLAMP.** Machines having clamps for gripping the tire on each side of the section to be upset, which clamps are pivotally mounted, so that they may be swung toward each other, and thus upset the tire.
- Search Class—**
76—METAL TOOLS AND IMPLEMENTS, MAKING, subclass 27, Compound metal-working machines.
58. **FORGING, TIRE-UPSETTING, PIVOTED-CLAMP, SINGLE-LEVER.** Tire upsetting machines in which the clamps are gripped upon the work and are swung toward each other by means of a single lever.
59. **FORGING, TIRE-UPSETTING, SLIDING-CLAMP.** Machines having clamps for gripping the tire on each side of the section to be upset, which clamps are slidably mounted in guides, so that they may be reciprocated to upset the tire.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 96, Punching, Machines, Lever-operated.

CLASS 78—Continued.

60. **FORGING, DIES.** Miscellaneous dies for forging various metal articles. Some of the dies perform other incidental operations than forging or shaping, such as cutting or trimming.
 Note.—With the exception of this subclass and subclass 61, Forging, Dies, Upsetting, forging dies are subdivided according to the articles made.
61. **FORGING, DIES, UPSETTING.** Dies used in increasing the cross section of metal articles by pressure or blows.
 Note.—This subclass contains all such except those for upsetting the ends of bars and for upsetting tubes, which are classified under the subclasses 62, Forging, Dies, Upsetting, Heading-bars, and 63, Forging, Dies, Upsetting, Tubular articles, respectively.
62. **FORGING, DIES, UPSETTING, HEADING-BARS.** Self-explanatory.
63. **FORGING, DIES, UPSETTING, TUBULAR ARTICLES.** Self-explanatory.
64. **FORGING, DIES, CARRIAGE-IRONS.** Self-explanatory.
65. **FORGING, DIES, CARRIAGE-IRONS, AXLES AND AXLE-BOXES.** Self-explanatory.
66. **FORGING, DIES, CARRIAGE-IRONS, CLIPS AND SHACKLES.** Self-explanatory.
67. **FORGING, DIES, CARRIAGE-IRONS, FIFTH-WHEELS.** Self-explanatory.
68. **FORGING, DIES, CARRIAGE-IRONS, KING-BOLTS.** Self-explanatory.
- 68.5. **FORGING, DIES, PLOW AND CULTIVATOR IRONS.** Dies for forming plow and cultivator irons, such as plow-points, beams, moldboards, harrow-teeth, clevises, etc.
69. **ABOLISHED.**
70. **FORGING, DIES, EYEBARS AND EYEBOLTS.** Self-explanatory.
71. **ABOLISHED.**
72. **FORGING, DIES, LEATHER-WORKERS' IRONS.** Self-explanatory.
73. **FORGING, DIES, RAILWAY-CAR IRONS.** Self-explanatory.
74. **FORGING, DIES, RAILWAY-CAR IRONS, AXLES AND AXLE-BOXES.** Self-explanatory.
75. **FORGING, DIES, RAILWAY-CAR IRONS, DRAW-BARS AND COUPLINGS.** Self-explanatory.
76. **FORGING, DIES, RAILWAY-TRACK IRONS.** Self-explanatory.
77. **FORGING, DIES, SPINNERS' AND WEAVERS' IRONS.** Self-explanatory.
78. **FORGING, DIES, SPRINGS AND SPRING-CLIPS.** Self-explanatory.
79. **FORGING, DIES, TURNBUCKLES.** Self-explanatory.
80. **FORGING, DIES, WHEELS.** Self-explanatory.
81. **FORGING, PROCESSES.** General forging processes.
 Note.—When the process is limited to the production of a particular article, it is classified in class 29, METAL-WORKING, subclass 148, Blanks and processes or in a subclass thereunder.
82. **WELDING.** Apparatus, material, and processes for uniting metal parts by welding.
 Note.—The mere utility of a machine for welding is not sufficient to place it in this class. Only those machines which are peculiarly adapted for welding are here included.
83. **WELDING, TUBES.** Machines for making welded tubes either from flat blanks or from skelps.
 Search Class—
 205—METAL-DRAWING, subclass 9, Tube-welding, and subclasses thereunder, for Machines and processes for making welded tubes by drawing through dies.

CLASS 78—Continued.

84. **WELDING, TUBES, CROSS-WELD.** Machines for welding tube-sections together—that is, making a welded joint in a plane transverse to the axis of the tube.
85. **WELDING, TUBES, CROSS-WELD, ROLLING.** Machines for welding tube-sections together, the welded joint being made by the operation of rolls.
86. **WELDING, TUBES, SPIRAL-WELD.** Machines for making tubes by spirally winding a sheet of metal and welding together contiguous edges.
87. **WELDING, TUBES, ROLLING.** Machines for making welded tubes, the welded joint being made by the operation of a roll or rolls.
88. **WELDING, TUBES, ROLLING, ROLLS AND MANDREL.** Machines for making welded tubes, the skelp being passed over a mandrel and being operated on by rolls upon opposite sides of the mandrel.
 Search Classes—
 78—METAL FORGING AND WELDING, subclass 103, Mandrels.
 80—METAL-ROLLING, subclasses 11, Tubes, and 13, Tubes, Axial-rolling.
89. **WELDING, TUBES, END-CLOSING.** Machines for closing the ends of tubes by welding in heads or welding up the end.
90. **WELDING, ROLLING.** Machines for welding together metal parts by means of rolls either rotary or oscillating.
91. **WELDING, WELDING-STRIPS.** Strips of metal to be interposed between metal parts to be joined and to be welded to both.
92. **WELDING, PROCESSES.** Processes, applicable generally, for welding metal articles and processes for welding particular articles which require some modification of the welding operation.
93. **WELDING, PROCESSES, DISSIMILAR METALS.** Processes for welding unlike metals together, as wrought-iron and steel, iron and copper, etc.
94. **WELDING, PROCESSES, RINGS AND TUBES.** Processes for making welded rings and tubes and welding together sections of tubes.
95. **WELDING PROCESSES, BLOOMS.** Processes for making blooms from scrap-iron, railroad-rails, etc., by operations or treatment which welds the parts together.
96. **WORK-HANDLING MECHANISM.** Devices and machines for automatically feeding or manipulating work to be forged or to assist in manually feeding or manipulating the work or mechanism for discharging the work.
97. **WORK-HANDLING MECHANISM, WIRE OR STRIP FEEDING.** Mechanism for feeding wire or strips to the forging or welding machines.
98. **WORK-HANDLING MECHANISM, FEEDING AND ROTATING.** Mechanisms for feeding and rotating or feeding or rotating the work under the hammer.
99. **WORK-HANDLING MECHANISM, BLANK-FEEDING.** Mechanisms for feeding blanks to forging or welding machines or discharging the articles.
100. **WORK-HANDLING MECHANISM, SHIFTING.** Mechanisms for gold-beating machines and the like which shift the work under the hammer.
101. **WORK-HANDLING MECHANISM, SUPPORTS.** Devices for supporting work being operated upon. The work is merely supported and must be manually manipulated.
102. **WORK-HANDLING MECHANISM, SUPPORTS, TABLES.** Tables for power hammers and presses, on which the work can be supported while being forged or welded.
103. **MANDRELS.** All mandrels used for pipe-welding, seamless-tube rolling, or similar purposes.
 Search Classes—
 78—METAL FORGING AND WELDING, subclass 88, Welding, Tubes, Rolling, Rolls and mandrel; 80, METAL-ROLLING, subclass 11, Tubes, and subclasses thereunder.

CLASS 79.—BUTTON-MAKING.

DEFINITIONS.

Class.

This class includes machines and processes for making buttons or the parts thereof and assembling the same, including metallic, composition, pearl, etc., except such buttons as are formed of plastic material, including molten glass, which are formed in molds or are molded upon the shanks of the buttons, these being classified in class 18, **PLASTICS**, or class 49, **GLASS**, or class 92, **PAPER-MAKING** and **FIBER LIBERATION** under appropriate subclasses, and except metallic buttons formed by casting, including casting upon shanks, classified in class 22, **Metal founding**.

Subclasses.

1. **MISCELLANEOUS.** Machines and processes for making buttons or the parts thereof and assembling such parts not otherwise classifiable.

2. **SHANK-BUTTONS.** Machines and processes for making shank-buttons from sheet metal, leather, and compositions, including glass, papier-mâché, etc., which form the button-head and also form and secure a shank or eye to the button-head.

Note.—Machines for forming the shank merely are also classified in this subclass, inasmuch as they are usually but fragments of the button-making machines.

Note.—Machines that merely mold buttons are classified in the appropriate molding or casting class according to the material used.

Search Classes—

18—**PLASTICS**, subclass 36, Molding devices, molds, blank covering and filling, for machines for molding buttonheads upon already-formed backs or shanks.

49—**GLASS**, subclass 66, Molds, Uniting parts, and 81, Processes, Uniting parts.

3. **METALLIC.** Miscellaneous machines for making metallic buttons, usually by cutting the blank from a sheet of metal and bending, die-shaping, or spinning the blank into the form of a button.

Note.—Machines for merely cupping or die-shaping button-blanks are classified in class 113, **SHEET-METAL WARE MAKING**, subclass 38, Die-shaping, and other subclasses under Die-shaping.

4. **METALLIC, COVERED.** Machines for uniting the front, filling-blank, and back of metallic buttons, including buttons having celluloid fronts, photographic buttons, etc.

5. **METALLIC, COVERED, CLOTH.** Machines for forming and assembling cloth-covered buttons. These machines include devices for cutting the cloth.

6. **PEARL AND COMPOSITION, SURFACING AND DRILLING.** Combined machines for surfacing and drilling pearl or composition buttons.

Search Class—

144—**WOODWORKING**, subclass 14, Special-work machines, Combined, Spool.

7. **PEARL AND COMPOSITION, SURFACING.** Machines and processes for turning, grinding, buffing, or polishing buttons in the process of their manufacture not classifiable in the following subclasses.

Note.—This subclass does not include patents on devices for cleaning and polishing buttons attached to garments. Such patents are classified in class 51, **GRINDING AND POLISHING**, subclass 4, Metal, Curved surfaces.

8. **PEARL AND COMPOSITION, SURFACING, TOOL-SHARPENING.** Machines having tool-sharpening mechanism in combination with turning or surfacing mechanism.

9. **PEARL AND COMPOSITION, SURFACING, MULTIPLE CHUCK.** Machines for turning, grinding, or polishing the face of a button, which are provided with a plurality of chucks for clamping the button-blank.

Search Class—

79—**BUTTON-MAKING**, subclass 6, Pearl and composition, Surfacing and drilling.

CLASS 79—Continued.

10. **PEARL AND COMPOSITION, SURFACING, TRIMMING.** Machines and processes for smoothing and trimming the periphery of buttons or button-blanks.

Search Classes—

10—**BOLT, NAIL, NUT, RIVET, AND SCREW MAKING**, subclass 21, Bolt and rivet making, Bolt-pointing.

144—**WOODWORKING**, subclasses 30, Special-work machines, Single or combined, Pin-pointing, and 205, Tenon-turning.

11. **PEARL AND COMPOSITION, DRILLING, MULTIPLE SPINDLE, AXIALLY OPPOSITE.** Machines for drilling buttons in which the button-blank is held in a clamp between axially-aligned drills or pairs of drills which cut toward each other from opposite sides of the work.

Search Class—

77—**BORING AND DRILLING**, subclass 21, Drilling-machines, Multiple spindle, Axially opposite.

12. **PEARL AND COMPOSITION, DRILLING, MULTIPLE SPINDLE, MULTIPLE CHUCK.** Button-drilling machines having a plurality of drill-spindles and also a plurality of button-holding chucks.

Search Classes—

79—**BUTTON-MAKING**, subclass 6, Pearl and composition, Surfacing and drilling.

77—**BORING AND DRILLING**, subclass 23, Drilling-machines, Multiple spindle, Parallel axes, Circular gang.

142—**WOOD-TURNING**, subclass 4, Circular section, Many-spindle lathes.

13. **PEARL AND COMPOSITION, DRILLING, MULTIPLE SPINDLE, SINGLE CHUCK.** Button-drilling machines having a plurality of drill-spindles which operate upon a button held in a single chuck.

Search Class—

77—**BORING AND DRILLING**, subclass 23, Drilling-machines, Multiple spindle, Parallel axes, Circular gang.

14. **PEARL AND COMPOSITION, DRILLING, SINGLE SPINDLE, SINGLE CHUCK.** Button-drilling machines having but a single drill-spindle and a single chuck for holding the button.

15. **PEARL AND COMPOSITION, BLANK-SAWING.** Machines for cutting and sizing button-blanks by means of a saw. These machines are mainly for producing buttons of equal thickness. This subclass does not include tubular saws.

Search Class—

144—**WOODWORKING**, subclasses 21, Special-work machines, Single or combined, Disk-cutting, and 22, Special-work machines, Single or combined, Disk-cutting, Blank-sawing, Feeding and punching.

16. **PEARL AND COMPOSITION, BLANK-SAWING, TUBULAR SAW.** Machines for cutting button-blanks from the stock by means of a tubular saw.

Search Classes—

143—**WOOD-SAWING**, subclass 85, Tubular-saw machines.

144—**WOODWORKING**, subclasses 20, Special-work machines, Single or combined, Disk cutting and boring; 23, Special-work machines, single or combined, Disk-cutting, Rotary tubular cutter, and 113, Boring, Hollow auger.

17. **BLANK-FEEDERS.** Mechanisms for feeding blanks to button making or assembling machines. This subclass also includes devices for feeding the partly-formed button from one operating mechanism to another.

Search Classes—

113—**SHEET-METAL WARE, MAKING**, subclass 114, Work-feeders, Cap and head.

218—**BUTTON, EYELET, AND RIVET SETTING**, subclasses 12, Machines, Button, Button-feeders, and 13, Machines, Button, Tack-fastener feeders.

18. **WORK-SUPPORTS.** Clamps for supporting the button-blank while it is being operated upon by the surfacing or drilling mechanism.

Note.—This subclass does not include chucks carried by either the head-stock or the tail-stock of the lathe.

CLASS 80.—METAL-ROLLING.

DEFINITIONS.

Class.

This class includes devices and processes for shaping metal while in a self-sustaining condition by the action of rolls and those which shape it by giving the metal a rolling action.

Note.—Mere bending of the metal without changing the cross-sectional area is found in class 153, METAL-BENDING.

Note.—Combined cutting and rolling, drawing and rolling, and heating and rolling devices and processes are found in this class.

Note.—Combined welding and rolling and forging and rolling are found in class 29, METAL-WORKING, and in class 78, METAL-FORGING AND WELDING.

Note.—Shaping molten metal by rolls is in class 207, PLASTIC METAL WORKING.

Subclasses.

1. MISCELLANEOUS. Metal-rolling devices not classifiable elsewhere.
2. HEATING AND ROLLING. Apparatus which heats and also rolls the metal.
3. CUTTING AND ROLLING. Apparatus which cuts and also rolls the metal.
Note.—The severing by the sharp edges of die-rolls is not found here, but in subclass 24, Die-rolling, and subclasses thereunder.
4. DRAWING AND ROLLING. Apparatus which draws and also rolls the metal.
5. ANNULAR BODIES. The blank operated upon or produced is ring-shaped. One or more rolls act upon the outer periphery of the annular body, which is supported in whole or in part by one or more rolls acting upon its inner periphery.
6. SCREW-THREADS. Apparatus for rolling screw-threads into metal bodies.
7. SCREW-THREADS, CONCAVE AND ROLL. The screw-threads are formed on the blank by the cooperation of a roll and concave die.
8. SCREW-THREADS, PLATEN-ROLLING. Screw-threads are rolled upon the blank by the cooperation of a pair of platens, between which the blank is rolled.
9. SCREW-THREADS, PLATEN-ROLLING, DIES. Dies of screw-thread platen-rolling machines.
10. SCREW-THREADS, RODS AND WIRES. Machines for rolling screw-threads on wires or rods of indefinite lengths.
Note.—A few machines for corrugating or nicking wire by a rolling action are also found here.
11. TUBES. Rolling-mills for rolling tubes from tubular or solid blanks.
Note.—Machines which merely bend flat plates into tubular form are found in class 153, METAL-BENDING, in which class see the subclass of 54, Curving or straightening, Roll.
Search Class—
78—METAL FORGING AND WELDING, subclass 103, Mandrels for the structure of the mandrel over which the tube is formed.
12. TUBES, IDLE ROLLS. Mills for rolling tubes in which the tube is shaped by being forced through idle rolls.
13. TUBES, AXIAL-ROLLING. Mills for rolling tubes in which the axes of the rolls are substantially parallel with the axis of the tube, the tube rotating on its axis under the action of the rolls.
Search Class—
80—METAL ROLLING, subclass 12, Tubes, Idle rolls.
14. TUBES, SEGMENTAL ROLLS. The tube is fed through rolls which are segmental in form, the tube being fed forward by a separate feeding mechanism whenever the cut-away portion of the roll is in position to allow it.
15. TUBES, SKELPING. A blank is formed into proper shape and bent into tubular form by rolls.
Note.—Machines which merely bend a flat blank into tubular shape are found in class 153, METAL-BENDING.
Note.—Machines which weld and shape are in class 78, METAL-FORGING AND WELDING, subclass 103, mandrels and class 205, METAL-DRAWING subclasses 26, Dies and 27, Dies, Skelping.
16. WHEELS AND DISKS. Mills for performing rolling operations on wheels and disks.
Search Class—
80—METAL ROLLING, subclass 1, Annular bodies for Mills for rolling tires and the like.

CLASS 80—Continued.

17. REWORKING. Apparatus for rolling old or worn metal shapes into merchantable shapes.
18. CONCAVE AND ROLL. The work is shaped between a roll and a concave surface.
Search Class—
80—METAL-ROLLING, subclass 7, Screw-threads, Concave and roll.
19. PLATEN AND ROLL. The metal is shaped between a roll and a moving platen.
20. PLATEN-ROLLING. The metal is shaped between a pair of platens, the relative motion of which gives a rolling motion to the blank.
Search Class—
80—METAL-ROLLING, subclasses 8, Screw-threads, Platen-rolling, and 9, Screw-threads, Platen-rolling, Dies.
21. PLATEN-ROLLING, DISK-PLATENS. The metal is rolled between a pair of rotating disks placed face to face.
22. AXIAL-ROLLING. The work is acted upon by two or more rolls rotating in the same direction, the axes of the rolls being parallel, or substantially so, to the axis of the work, which rotates about its own axis under the action of the rolls.
Search Classes—
80—METAL-ROLLING, subclass 13, Tubes, Axial-rolling, 153—METAL, BENDING, subclass 60, Curving or straightening, Roll, Skewed.
23. AXIAL-ROLLING, PATTERN-ROLLS. The rolls are so shaped that the work turned out has a predetermined form other than that of a bar of uniform circular section.
Search Class—
80—METAL-ROLLING, subclasses 6, Screw-threads, and 10, Screw-threads, Rods and wires.
24. DIE-ROLLING. The work is fed through a roll-pass which varies in size or configuration as the work progresses through the rolls.
25. DIE-ROLLING, OSCILLATING ROLLS. Die-rolling mills in which the work is subjected to the action of a pair of rolls or roll-segments which do not rotate, but merely oscillate about their axes.
26. DIE-ROLLING, BLANK FEEDING AND GAGING. Die-rolling mills provided with mechanism for feeding or gaging the work.
Search Class—
80—METAL-ROLLING, subclasses 8, Screw-threads, platen-rolling; 12, Tubes, Idle rolls, and 14, Tubes, Segmental rolls.
27. DIE-ROLLING, CONTINUOUS. The work travels through successive die-roll passes and is in engagement with the walls of two or more of the passes at the same time.
28. DIE-ROLLING, THREE OR MORE COACTING ROLLS. Three or more rolls cooperate to form a die-pass through which the work is forced.
29. DIE-ROLLING, ADVANCING AND RECEDING ROLLS. The roll-pass through which the work passes is varied by moving the rolls bodily toward or from one another while the work is progressing through them.
30. DIE-ROLLING, RECURRENT-PATTERN. The dies are so developed about the rolls that when a bar or strip of material is fed continuously into the rolls articles of the desired shape are formed successively therefrom.
Search Class—
80—METAL-ROLLING, subclasses 6, Screw-threads, 27, Die-rolling, continuous; and 28, Die-rolling, Three or more coacting rolls.
31. ABOLISHED.
32. MILLS, COILING. Rolling-mills provided with mechanism for coiling the product.
Search Class—
80—METAL-ROLLING, subclass 10, Screw-threads, Rods and wires.
33. MILLS, WORK-REVERSING. Two-high mills specially adapted to the repeated back and forth rolling of the blank between the same pair of rolls.
Note.—The adaptation to carry the invention into this subclass must be something more than the mere addition of a reversing mechanism.
34. MILLS, THREE OR MORE COACTING ROLLS. Three or more rolls cooperate to form the pass through which the work is forced.
Note.—In mills of the axial-rolling type three rolls surrounding the work are frequently employed.
Search Class—
80—METAL-ROLLING, subclass 28, Die-rolling, Three or more coacting rolls.

CLASS 80—Continued.

35. **MILLS, CONTINUOUS.** Rolling-mills in which the work passes through successive roll-passes and is in engagement ordinarily with two or more passes at the same instant.
Search Classes—
 80—METAL-ROLLING, subclass 27, Die-rolling, Continuous; 153, METAL-BENDING, subclass 54, Curving or straightening, Roll.
36. **MILLS, CONTINUOUS, INCLINED TRAINS.** The successive pairs of rolls or some of them are not parallel to each other, but are so set that they act upon the work from different directions.
Search Class—
 80—METAL-ROLLING, subclasses 11, Tubes; 27, Die-rolling, Continuous, and 34, Mills, Three or more coating rolls.
37. **MILLS, CONTINUOUS, LOOP-RETURN.** The successive roll-passes are formed in the same stand of three-high rolls, or at least are so placed that the work in traveling from one pass to the next turns upon itself, looped guides being usually provided to take care of the work.
38. **MILLS, AUXILIARY SUPPORTING-ROLLS.** The rolls between which the work passes are supported by other rolls whose axes are parallel to those of the working rolls.
39. **MILLS, THREE-HIGH.** Mills in which three rolls are mounted in the same stand with their axes parallel and in the same vertical plane, thus forming two roll-passes or series of passes, the work entering one pass and being returned through the other pass or through one of the passes in the other series.
Search Class—
 80—METAL-ROLLING, subclass 37, Mills, Continuous, Loop-return.
40. **MILLS, IDLE ROLLS.** The shaping-rolls are not provided with driving mechanism, the work being pushed or pulled through the rolls by a separate mechanism.
Search Class—
 80—METAL-ROLLING, subclasses 12, Tubes, Idle rolls; 34, Mills, Three or more coating rolls, and 36, Mills, Continuous, Inclined trains.
41. **ROLL COOLING AND HEATING.** Appliances and modifications in the roll structure to permit of an artificial heating or cooling of the roll.
42. **COOLING-BEDS.** Beds or tables upon which the metal coming from the rolls is placed to cool.
43. **FEEDING.** Miscellaneous devices for feeding and conveying the work to and from the rolls.
Search Classes—
 80—METAL-ROLLING, subclass 26, Die-rolling, blank feeding and gaging; 193, CONVEYERS, according to the structure of the mechanism; 212, CRANES AND DERRICKS; and 214, LOADING AND UNLOADING.
44. **FEEDING, TABLES.** Platforms or like structures upon which the work rests to be fed into or away from the forming-rolls.
45. **FEEDING, TABLES, HORIZONTALLY AND VERTICALLY MOVABLE.** The feed-table can be moved bodily both in a horizontal and vertical direction.
46. **FEEDING, TABLES, HORIZONTALLY - MOVABLE.** The feed-table can be moved bodily in its horizontal plane.
Search Class—
 80—METAL-ROLLING, subclass 45, Feeding, Tables, Horizontally and vertically movable.
47. **FEEDING, TABLES, VERTICALLY-MOVABLE.** The feed-table can be moved bodily in a vertical direction.
Search Class—
 80—METAL-ROLLING, subclass 45, Feeding, Tables, Horizontally and vertically movable.
48. **FEEDING, TABLES, SHIFTERS.** The type of feed-table which is provided with mechanism for shifting the position of the work on the table. Devices for transferring the work from one table to another are also found here.
49. **FEEDING, TABLES, SHIFTERS, HORIZONTALLY AND VERTICALLY MOVABLE CARRIER.** The work is shifted by means of a carrier which has a horizontal and vertical movement.

CLASS 80—Continued.

50. **FEEDING, TABLES, SHIFTERS, SWINGING CARRIER.** The shifting is done by means of a carrier on which the work rests and which swings bodily with the work from one position to another.
51. **FEEDING, GUIDES AND CONDUCTORS.** Mechanism, such as troughs and gripping devices, for guiding and conducting the work into and away from the rolls.
Search Class—
 80—METAL-ROLLING, the subclasses under the title of Mills, Continuous.
52. **FEEDING, GUIDES AND CONDUCTORS, LOOP-RE-TURN.** Guides and conductors to be employed where the work is turned upon itself loop fashion.
Search Class—
 80—METAL-ROLLING, subclass 37, Mills, Continuous, Loop-return.
53. **FEEDING, GUIDES AND CONDUCTORS, WORK-ROTATING.** The guiding and conducting mechanism is adapted to give the work as it emerges from one pass of a continuous mill a partial rotation with respect to its own axis before entering it in the succeeding pass.
54. **GEARING.** Such forms of gearing as appear peculiar to the driving of the rolls in the metal-rolling mill.
 Note.—For gearing employed in increasing the speed of successive pairs of rolls in continuous mills see in this class the subclasses under the title of Mills, Continuous.
Search Class—
 80—METAL-ROLLING, subclass 33, Mills, Work-reversing.
55. **HOUSINGS.** The novelty lies in the frame or housing in which the rolls are mounted.
56. **ROLL ADJUSTMENTS.** Mechanism for adjusting rolls in order to vary the size or shape of the roll-pass.
Search Class—
 80—METAL-ROLLING, subclasses 5, Annular bodies; 22, Axial-rolling; 29, Die-rolling, Advancing and receding rolls; 36, Mills, Continuous, Inclined trains; and 33, Mills, Work-reversing.
57. **ROLL ADJUSTMENTS, RELIEF DEVICES.** Devices to allow the rolls to separate when overloaded, often automatic.
Search Class—
 80—METAL-ROLLING, subclasses 5, Annular bodies, and 22, Axial-rolling.
58. **ROLLS.** The general structure of the forming-roll of the ordinary type of rolling-mill.
Search Class—
 80—METAL-ROLLING, under the title of Die-rolling, for structures peculiar to the rolls of die-rolling mills.
59. **ROLLS, PASS ARRANGEMENT.** Modifications of the working faces of rolls to produce a pass or series of passes of a particular configuration or configurations, except such as are found in subclass 24, Die-rolling and the subclasses thereunder.
Search Class—
 80—METAL-ROLLING, subclasses 17, Reworking; 34, Mills, Three or more coating rolls; 66, Processes, Flanged bars, and 65, Processes, Reworking.
60. **PROCESSES.** Methods of manufacture by rolling of metal shapes, also methods involving cutting and rolling, drawing and rolling, and heating and rolling.
61. **PROCESSES, SCREW-THREADS.** Methods of making screw surfaces in metal by rolling.
62. **PROCESSES, TUBES.** Methods involved in the manufacture of tubes by rolling.
63. **PROCESSES, RODS AND WIRES.** Methods involved in the manufacture of rods and wires by rolling.
64. **ABOLISHED.**
65. **PROCESSES, REWORKING.** Methods involved in the reworking of old or worn metal forms by rolling.
66. **PROCESSES, FLANGED BARS.** Methods involved in the manufacture by rolling of flanged bars, such as T-rails or I-beams.

CLASS 81.—TOOLS.

DEFINITIONS.

Class.

In this class are tools which are not structurally limited to any classified art. The class is, with the exception of wrenches and vises, limited to hand-tools.

Subclasses.

1. MISCELLANEOUS. Miscellaneous tools not otherwise classifiable.
2. COMBINED WRENCHES AND PUMPS OR OILERS. Wrenches combined with pumps or oilers, or with both.
3. SPECIAL. Tools having a construction which limits them to work upon a specific article and for which there is no art classification.
4. SPECIAL, ENGRAVERS' CLAMPS. Devices for clamping articles while being engraved.
Search Class—
81—Tools, subclass 14, Tweezers.
5. SPECIAL, TWEEZERS. Tweezers having specific features which limit their application.
Search Class—
81—Tools, subclass 14, Tweezers.
6. SPECIAL, WATCHMAKERS'. Tools having special construction limiting them to watchmakers' use.
7. SPECIAL, WATCHMAKERS', JEWEL-SETTERS. Tools of special construction for use in setting jewels.
- 7.5. SPECIAL, WATCHMAKERS', MAINSPRING-WINDERS. Devices for winding and holding watch-mainsprings and for transferring the same into the mainspring-barrels of watches.
8. SPECIAL, WATCHMAKERS', RUBY-PIN SETTERS. Tools of special construction for use in setting ruby-pins or roller-jewels.
9. ABOLISHED.
- 9.3. HOSE CLAMP APPLIERS. Implements, usually of the plier type, for tightening and fastening wires, bands, straps, etc., around hose pipe.
Search Class—
100—PRESSES, subclass 13, Baling, Articles and attachments, Bale-band tighteners, for somewhat similar devices used for tightening bale-bands.
- 9.5. WIRE STRIPPERS. Hand tools for cutting, crushing, and removing wire coverings or sheaths, principally for stripping off insulation.
Note.—Implements of somewhat similar structure for cutting or crimping fuse are classified in class 86, ARMS, PROJECTILES, AND EXPLOSIVE CHARGES, MAKING, subclass 22, Loading fireworks and blasting charges, Implements, Fuse.
10. NUT-LOCK. Tools specially adapted for locking nuts and bolts together or for applying or removing nut or bolt locking devices.
11. ABOLISHED.
12. ABOLISHED.
13. BOLT-HOLDERS. Devices for holding a bolt from movement while a nut is turned on or off.
Search Class—
81—Tools, subclass 55, Wrenches, machine, bolt-holding.
- 13.5. ABOLISHED.
14. TWEEZERS. Miscellaneous, lightly constructed grasping tools the grasping arms of which are usually of elastic material having a tendency to open or close.
Note.—Tweezers of special construction for special work are in this class, subclass 5, Special, tweezers.
15. BENDING. Tools specially adapted for bending.
Note.—Tools limited to bending wire are in class 140, WIRE-WORKING, subclass 123, IMPLEMENTS, and subclasses thereunder.
16. ABOLISHED.
17. VISES. Instruments having jaws for firmly holding objects while being worked upon and known in the arts as "vises."
Search Class—
57—HOISTING, subclass 113, Lifters, Stove goods for analogous structure.

CLASS 81.—Continued.

18. VISES, HAND. Vises grasped by one hand while the other holds the tools to work upon the object held.
Search Class—
81—Tools, subclass 45, Pliers and tongs, locked jaws.
19. VISES, ROUND-WORK. Vises specially constructed for holding round work, as tubes, spheres, etc.
Search Class—
81—Tools, subclass 39, Vises, Jaw attachments, Round-work.
20. VISES, TURRET. The jaws are on revolving heads or carriers which may be turned to bring any pair of jaws into the desired position.
21. VISES, PIVOTED-JAW. One or both jaws are pivoted or swing or turn as if on a pivot.
Search Class—
78—METAL-FORGING AND WELDING, subclasses 4, Forging, Anvils, Vises, Foot, and 8, Forging, Anvils, Attachments, Vises.
22. VISES, PIVOTED-JAW, WEDGE-SHAPED WORK. The jaw or jaws are specially pivoted for receiving wedge-shaped work.
Search Class—
81—Tools, subclass 40, Vises, jaw attachments, wedge-shaped work.
23. VISES, PIVOTED-JAW, ADJUSTABLE-FULCRUM. The fulcrum on which the jaw swings is adjustable or travels toward and from the other jaw in order to hold work of different thickness.
Search Class—
81—Tools, subclass 42, Vises, Parallel mechanisms.
24. VISES, PIVOTED - JAW, ADJUSTABLE - FULCRUM, RACK. The fulcrum of the pivoted jaw is a tooth of a rack.
Search Class—
81—Tools, subclass 42, Vises, Parallel mechanisms.
25. VISES, PIVOTED-JAW, CAM. The jaw is closed by a cam.
Search Class—
78—METAL-FORGING AND WELDING, subclasses 4, Forging, Anvils, Vises, Foot, and 8, Forging, Anvils, Attachments, Vises.
26. VISES, SLIDING-JAW, CAM. A sliding jaw is closed by the actuation of a cam or by being guided on a cam-path.
Search Class—
81—Tools, subclass 128, Wrenches, Sliding-jaw, Cam-closing
27. VISES, RACK-LOCK. The movable jaw is locked against the work by means of a rack.
28. VISES, RACK-LOCK, TOOTHED-NUT. The nut or half-nut cooperating with the actuating-screw has teeth which may be engaged with or disengaged from a rack or pawl to provide a quick adjustment.
29. VISES, RACK-LOCK, TOOTHED-NUT, SECTIONAL. The toothed-nut or half-nut is made up of one or more sections which move toward and from a rack to lock and unlock the vise-jaw.
30. VISES, RACK-LOCK, PIVOTED RACK-CATCH. The movable jaw is locked in place by a pivoted catch which interlocks with a rack, the catch not being rigid with the jaw or the frame.
Search Class—
81—Tools, subclasses 134, Wrenches, Sliding adjustments, Rack, Pivoted rack-catch; 135, Wrenches, Sliding adjustments, Rack, Pivoted rack-catch, Non-traveling; 136, Wrenches, Sliding adjustments, Rack, Pivoted rack-catch, Non-traveling, Intermediate-fulcrum, and 137, Wrenches, Sliding adjustments, Rack, Pivoted rack-catch, Transverse.
31. VISES, RACK-LOCK, SLIDING RACK-CATCH. The movable jaw is locked by a sliding catch interlocking with a rack.
Search Class—
81—Tools, subclasses 142, Wrenches, Sliding adjustments, Rack, Sliding rack-catch; 143, Wrenches, Sliding adjustments, Rack, Sliding rack-catch, Cam-seated; 144, Wrenches, Sliding adjustments, Rack, Sliding rack-catch, Screw or nut seated; 145, Wrenches, Sliding adjustments, Rack, Sliding rack-catch, Spring-seated.
32. VISES, NUT-OPERATED. The jaws are closed by the actuation of an interiorly-threaded device.
33. VISES, SCREW-OPERATED. The jaws are closed by the actuation of an exteriorly-threaded device.
Search Class—
81—Tools, subclasses 15, Vises, Hand; 19, Vises, round-work; 21, Vises, Pivoted jaw; 22, Vises, Pivoted-jaw, Wedge-shaped work; 23, Vises, Pivoted-jaw, Adjustable-fulcrum; 24, Vises, Pivoted-jaw, Adjustable-fulcrum, Rack; 25, Vises, Pivoted-jaw, Cam; 28, Vises, Rack-lock, Toothed-nut, and 29, Vises, Rack-lock Toothed-nut, Sectional.

CLASS 81—Continued.

34. **VISES, SCREW - OPERATED, MULTIPLE - INTERGEARED.** A plurality of jaw-closing screws are driven by gearing connecting them.
35. **VISES, SCREW - OPERATED, RIGHT AND LEFT THREADS.** The jaws are closed by the actuation of a right and left threaded screw.
Search Class—
81—TOOLS, subclass 163, Wrenches, Sliding adjustments, Thread, Right and left threads.
36. **VISES, SCREW-OPERATED, DISPLACEABLE NUT OR SCREW.** The nut and screw are separated in order to provide a quick adjustment.
Search Class—
81—TOOLS, subclasses 157, Wrenches, Sliding adjustments, Thread, Displaceable nut or screw, and 158, Wrenches, Sliding adjustments, Thread, Displaceable nut or screw, Traveling-screw, Shank-rack.
37. **VISES, SCREW-OPERATED, INTERRUPTED-THREAD.** The threads of the nut and screw are interrupted or cut away, so that by registering the cut-away part of the one with the full part of the other a quick adjustment may be had.
Search Class—
81—TOOLS, subclasses 150, Wrenches, Sliding adjustments, Thread, Interrupted; 160, Wrenches, Sliding adjustments, Thread, Interrupted, Nut-set; 161, Wrenches, Sliding adjustments, Thread, Interrupted, Nut-set, Traveling-nut, and 162, Wrenches, Sliding adjustments, Thread, Interrupted, Traveling-screw, Shank-rack.
38. **VISES, JAW ATTACHMENTS.** Parts attached to or cooperating with the jaw-holders and capable of replacement when worn or when a jaw-piece of a different kind is desired.
39. **VISES, JAW ATTACHMENTS, ROUND-WORK.** Attachments constructed to hold round work, as pipes, spheres, etc.
Search Class—
81—TOOLS, subclass 19, Vises, Round work.
40. **VISES, JAW ATTACHMENTS, WEDGE-SHAPED WORK.** Attachments constructed to hold wedge-shaped work.
Search Class—
81—TOOLS, subclass 22, Vises, Pivoted-jaw, Wedge-shaped work.
41. **VISES, MOUNTS.** Means by which vises are mounted to make them secure or to adapt them to be turned in various directions.
Search Classes—
144—WOODWORKING, subclass 288, Work-holding stands.
208—VELOCIPEDES, subclass Holders and the subclasses thereunder.
42. **VISES, PARALLEL MECHANISMS.** Means whereby the jaws are caused to maintain parallelism.
Search Class—
81—TOOLS, subclasses 23, Vises, Pivoted-jaw, Adjustable-fulcrum, and 24, Vises, Pivoted-jaw, Adjustable-fulcrum, Rack.
43. **PLIERS AND TONGS.** Tools for holding or bending objects and embracing those pincers and grasping devices known in the arts as pliers and tongs.
Note.—Pliers specially constructed for bending are in Bending, this class, and for cutting, in Pipe and rod cutters, under this class.
Search Classes—
81—TOOLS, subclasses 3, Special; 4, Special, Engravers' clamps, and 5, Special, Tweezers.
7—COMPOUND TOOLS, subclass 3, Type, Pliers, and subclasses thereunder.
44. **PLIERS AND TONGS, EXPANDING.** The jaws move away from each other in seizing objects.
Search Classes—
81—TOOLS, subclasses 3, Special; 4, Special, Engravers' clamps, and 5, Special, Tweezers.
7—COMPOUND TOOLS, subclass 3, Type, Pliers, and subclasses thereunder.
45. **PLIERS AND TONGS, LOCKED JAWS.** The tool is provided with means for locking the jaws in their closed or operative position.
Search Classes—
81—TOOLS, subclasses 18, Vises, Hand; 111, Wrenches, Pivoted side jaw, and the subclasses thereunder.
7—COMPOUND TOOLS, subclass 3, Type, Pliers, and the subclasses thereunder.
46. **PLIERS AND TONGS, SLIDING-JAW.** The jaws have a relative sliding movement, one or both jaws moving on guides.
Search Classes—
81—TOOLS, subclass 85, Wrenches, Hand-grip, Sliding-jaw, and the subclasses thereunder.
7—COMPOUND TOOLS, subclass 3, Type, Pliers, and the subclasses thereunder.
47. **PLIERS AND TONGS, CROSSED HANDLES.** The handles cross each other.
Search Classes—
81—TOOLS, subclasses 79, Wrenches, Hand-grip, Pivoted-jaw, Crossed handles, the subclasses thereunder, and 49, Pliers and Tongs, Crossed handles, Pivoted jaw-piece.
7—COMPOUND TOOLS, subclass 3, Type, Pliers, and the subclasses thereunder.

CLASS 81—Continued.

48. **PLIERS AND TONGS, CROSSED HANDLES, ADJUSTABLE PIVOT.** The pivots of the handles are movable in order to adjust the spread of the jaws.
Search Class—
7—COMPOUND TOOLS, subclass 3, Type, Pliers, and the subclasses thereunder.
49. **PLIERS AND TONGS, CROSSED HANDLES, PIVOTED JAW-PIECE.** One or both jaw-carriers have pivoted jaw-pieces to enable the tool to fit the surfaces of wedge-shaped or irregular objects.
Search Class—
7—COMPOUND TOOLS, subclass 3, Type, Pliers, and the subclasses thereunder.
50. **PLIERS AND TONGS, CROSSED HANDLES, PARALLEL JAWS.** The jaws are parallel in all positions.
Search Classes—
81—TOOLS, subclass 46, Pliers and Tongs, Sliding jaw, for pliers having a sliding jaw movable on guides.
7—COMPOUND TOOLS, subclass 3, Type, Pliers, and the subclasses thereunder.
51. **PLIERS AND TONGS, CROSSED HANDLES, SPRING-PRESSED.** The jaws are pressed by a spring.
Search Class—
7—COMPOUND TOOLS, subclass 3, Type, Pliers, and the subclasses thereunder.
52. **PLIERS AND TONGS, JAW ATTACHMENTS.** Parts attached to the jaw-holders and capable of replacement when worn or when a jaw-piece of different type is desired.
53. **WRENCHES.** Devices for exerting a twisting strain, as in turning bolts, nuts, pipes, and the like, and known in the arts as wrenches.
Note.—This subclass includes wrenches not classifiable in any subclass hereinunder.
Search Class—
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 148 to 151, Screw-threading, Tapping, Implements, Tap-wrenches, and 2, Screw making, for wrenches for rotating taps.
54. **WRENCHES, MACHINE.** Wrenches having a casing or framework which carries moving mechanical elements, but does not itself move during the operation of the wrench.
55. **WRENCHES, MACHINE, BOLT-HOLDING.** The wrench has a device or part which prevents the movement of the bolt while the nut is being turned on or off.
Search Class—
81—TOOLS, subclass 13, Bolt-holders
56. **WRENCHES, MACHINE, BOLT - HOLDING, GEAR-OPERATED.** The bolt-holding wrench is operated by gearing.
Note.—Where the novelty lies in the gearing, search should be made in this class, subclass 57, Wrenches, Machine, Gear-operated.
57. **WRENCHES, MACHINE, GEAR - OPERATED.** The wrench is operated by gearing.
Search Class—
81—TOOLS, subclass 56, Wrenches, Machine, Bolt-holding, Gear-operated.
58. **WRENCHES, CLUTCHED-HEAD.** The jaws of the wrench are supported by a head which is clutched by an operating-part, usually a lever.
Search Classes—
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 124, Screw-threading, Implements, Die-stocks, Ratchet, and 150, Screw-threading, Tapping, Implements, Tap-wrenches, Ratchet.
74—MACHINE ELEMENTS, subclass 16, Pawls and ratchets.
77—BORING AND DRILLING, subclasses 10, Drilling-machines, Portable, Rail-drills, Ratchet; 44, Ratchet-drills, and 50, Ratchet-drills, Band-grip.
145—WOODWORKING-TOOLS, subclasses 70, Bit-stocks, Ratchet; 75, Handles, Ratchet-and-pawl; 76, Handles, Ratchet-clutch, and 77, Handles, Cross-bar, Ratchet.
151—NUT AND BOLT LOCKS, subclasses under Coupled nut and bolt, Pawl-and-ratchet; 17, Coupled nut and bolt, Thread-lock, Superposed nuts, Oppositely-threaded, Key or pawl locked; 39, Locked nut, Base-clutch, Pawl-and-ratchet; 40, Locked nut, Base-clutch, Pawl-and-ratchet, Nut-carried pawl; 41, Locked nut, Base-clutch, Pawl-and-ratchet, Yielding interlocking washer, and 48, Locked nut, Side lock, Pawl-and-ratchet.
188—RAILWAY-BRAKES, subclass 52, Staffs, and subclasses thereunder.
59. **WRENCHES, CLUTCHED-HEAD, SEGMENTAL.** The wrench-head is a segment of a circle at the clutching-surface and is not capable of full revolution.
Search Classes—
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 124, Screw-threading, Implements, Die-stocks, Ratchet, and 150, Screw-threading, Tapping, Implements, Tap-wrenches, Ratchet.
74—MACHINE ELEMENTS, subclass 16, Pawls and ratchets.
77—BORING AND DRILLING, subclasses 10, Drilling-machines, Portable, Rail-drills, Ratchet, and 44, Ratchet-drills.
145—WOODWORKING-TOOLS, subclasses 70, Bit-stocks, Ratchet; 75, Handles, Ratchet-and-pawl; 76, Handles, Ratchet-clutch, and 77, Handles, Cross-bar ratchet.

CLASS 81—Continued.

- 151—NUT AND BOLT LOCKS**, subclasses under Coupled nut and bolt, Thread-lock, Superposed nuts, Oppositely-threaded, Key or pawl locked; 39, Locked nut, Base-clutch, Pawl-and-ratchet; 40, Locked nut, Base-clutch, Pawl-and-ratchet, Nut-carried pawl; 41, Locked nut, Base-clutch, Pawl-and-ratchet, Yielding interlocking washer, and 48, Locked nut, Side lock, Pawl-and-ratchet.
- 188—RAILWAY-BRAKES**, subclass 52, Staffs, and subclasses thereunder.
- 60. WRENCHES, CLUTCHED-HEAD, RATCHET.** The wrench-head has a series of ratchet-teeth clutched by the driving device.
- Search Classes—**
10—BOLT, NAIL, NUT, RIVET, AND SCREW-MAKING, subclasses 124, Screw-threading, Implements, Die-stocks, Ratchet, and 150, Screw-threading, Tapping, Implements, Tap-wrenches, Ratchet.
74—MACHINE ELEMENTS, subclass 16, Pawls and ratchets.
77—BORING AND DRILLING, subclasses 10, Drilling-machines, Portable, Rail-drills, Ratchet; 44, Ratchet-drills, and 51, Ratchet-drills, Sliding-pawl.
145—WOODWORKING-TOOLS, subclasses 70, Bit-stocks, Ratchet; 75, Handles, Ratchet-and-pawl; 76, Handles, Ratchet-clutch, and 77, Handles, Cross-bar, Ratchet.
151—NUT AND BOLT LOCKS, subclasses under Coupled nut and bolt, Pawl-and-ratchet; 17, Coupled nut and bolt, Thread-lock, Superposed nuts, Oppositely-threaded, Key or pawl locked; 39, Locked nut, Base-clutch, Pawl-and-ratchet; 40, Locked nut, Base-clutch, Pawl-and-ratchet, Nut-carried pawl; 41, Locked nut, Base-clutch, Pawl-and-ratchet, Yielding interlocking washer; and 48, Locked nut, Side lock, Pawl-and-ratchet.
188—RAILWAY-BRAKES, subclass 52, Staffs, and subclasses thereunder.
- 61. WRENCHES, CLUTCHED-HEAD, RATCHET, PIVOTED-PAWL.** A pawl pivoted to the driving device engages the ratchet-teeth of the head.
- Search Classes—**
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 124, Screw-threading, Implements, Die-stocks, Ratchet, and 150, Screw-threading, Tapping, Implements, Tap-wrenches, Ratchet.
74—MACHINE ELEMENTS, subclass 16, Pawls and ratchets.
77—BORING AND DRILLING, subclasses 10, Drilling-machines, Portable, Rail-drills, Ratchet, and 44, Ratchet-drills.
145—WOODWORKING-TOOLS, subclasses 70, Bit-stocks, Ratchet; 75, Handles, Ratchet-and-pawl; 76, Handles, Ratchet-clutch, and 77, Handles, Cross-bar, Ratchet.
151—NUT AND BOLT LOCKS, subclasses under Coupled nut and bolt, Pawl-and-ratchet; 17, Coupled nut and bolt, Thread-lock, Superposed nuts, Oppositely-threaded, Key or pawl locked; 39, Locked nut, Base-clutch, Pawl-and-ratchet; 40, Locked nut, Base-clutch, Pawl-and-ratchet, Nut-carried pawl; 41, Locked nut, Base-clutch, Pawl-and-ratchet, Yielding interlocking washer, and 48, Locked nut, Side lock, Pawl-and-ratchet.
188—RAILWAY-BRAKES, subclass 52, Staffs, et seq.
- 62. WRENCHES, CLUTCHED-HEAD, RATCHET, PIVOTED-PAWL, REVERSING.** The direction of rotation of the ratchet-head is reversible.
- Search Classes—**
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 124, Screw-threading, Implements, Die-stocks, Ratchet, and 150, Screw-threading, Tapping, Implements, Tap-wrenches, Ratchet.
74—MACHINE ELEMENTS, subclass 16, Pawls and ratchets.
77—BORING AND DRILLING, subclasses 10, Drilling-machines, Portable, Rail-drills, Ratchet; 44, Ratchet drills, and 48, Ratchet-drills, Reversible.
151—NUT AND BOLT LOCKS, subclasses under Coupled nut and bolt, Pawl-and-ratchet; 17, Coupled nut and bolt, Thread-lock, Superposed nuts, Oppositely-threaded, Key or pawl locked; 39, Locked nut, Base-clutch, Pawl-and-ratchet; 40, Locked nut, Base-clutch, Pawl-and-ratchet, Nut-carried pawl; 41, Locked nut, Base-clutch, Pawl-and-ratchet, Yielding interlocking washer, and 48, Locked nut, Side lock, Pawl-and-ratchet.
188—RAILWAY-BRAKES, subclass 52, Staffs.
- 63. WRENCHES, CLUTCHED-HEAD, RATCHET, PIVOTED-PAWL, REVERSING, SINGLE.** A single pawl controls the direction of revolution.
- Search Classes—**
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 124, Screw-threading, Implements, Die-stocks, Ratchet, and 150, Screw-threading, Tapping, Implements, Tap-wrenches, Ratchet.
74—MACHINE ELEMENTS, subclass 16, Pawls and ratchets.
77—BORING AND DRILLING, subclasses 10, Drilling-machines, Portable, Rail-drills, Ratchet; 44, Ratchet-drills, and 48, Ratchet-drills, Reversible.
145—WOODWORKING-TOOLS, subclasses 70, Bit-stocks, ratchet; 75, Handles, Ratchet-and-pawl; 76, Handles, Ratchet-clutch, and 77, Handles, Cross-bar, Ratchet.
151—NUT AND BOLT LOCKS, subclasses under Coupled nut and bolt, Pawl-and-ratchet; 17, Coupled nut and bolt, Thread-lock, Superposed nuts, Oppositely-threaded, Key or pawl locked; 39, Locked nut, Base-clutch, Pawl-and-ratchet; 40, Locked nut, Base-clutch, Pawl-and-ratchet, Yielding interlocking washer, and 48, Locked nut, Side lock, Pawl-and-ratchet.
188—RAILWAY-BRAKES, subclass 52, Staffs.

CLASS 81—Continued.

- 64. WRENCHES, FLEXIBLE.** The object turned is surrounded wholly or partly by a flexible gripping device.
- Search Class—**
77—BORING AND DRILLING, subclass 50, Ratchet drills, Hand-grip.
- 65. WRENCHES, FLEXIBLE, THREADED ADJUSTMENT.** The flexible device is adjusted to the size of the work by a screw-threaded device.
- 66. WRENCHES, FLEXIBLE LINK.** The flexible device is made up of links.
- 67. WRENCHES, FLEXIBLE, LINK, CLAW.** A part of the handle claws or draws or tends to claw or draw a portion of the chain lengthwise between the work and such part of the handle.
- 68. WRENCHES, FLEXIBLE, LINK, HANDLE-JAW.** A jaw on the handle engages the work.
 Note.—If a pivoted jaw is a link of a chain it is classified herein not in Flexible, link, handle-jaw, pivoted, this class.
- 69. WRENCHES, FLEXIBLE, LINK, HANDLE-JAW, PIVOTED.** A pivoted jaw carried by the handle engages the work, the said jaw not being a link of the chain.
 Note.—If the jaw is a link of the chain, it is classified in this class, subclass 68, Wrenches, flexible, link, handle-jaw.
- 70. WRENCHES, FLEXIBLE, LINK, HANDLE-JAW, DUPLEX.** The handle-jaw has two faces, either of which may engage the work according to the direction the chain is passed about it.
- 71. WRENCHES INSERTED.** Wrenches which are inserted in a hole or tube.
- 72. WRENCHES, INSERTED, EXPANDING.** Parts of the wrench move outwardly to cause locking engagement with the walls of holes or tubes.
- 73. WRENCHES, U-CRANK ARM.** The operating part has a U-shaped arm similar to the common bit-stock.
- 74. WRENCHES, WHEEL-OPERATED.** Wrenches attached to and driven by wheels to turn nuts on or off from axles.
- 75. WRENCHES, WHEEL-OPERATED, HUB-RIM GRASP.** The wrench grips the rim of the wheel-hub to rotate the wrench and wheel together.
- 76. WRENCHES, WHEEL-OPERATED, HUB-RIM GRASP, INTERNAL.** The wrench grips the interior of the hub-rim.
- 77. WRENCHES, DOUBLE-ENDED, SIMULTANEOUS ADJUSTMENT.** The wrench has at each end jaws which are adjusted at the same time.
- WRENCHES, HAND-GRIP.** The subclasses hereunder include wrenches whose jaws close upon the work by the grip of the hand.
- 78. WRENCHES, HAND-GRIP, PIVOTED-JAW.** The grip of the hand operates one or more pivoted jaws, one jaw swinging relatively to the other.
- 79. WRENCHES, HAND-GRIP, PIVOTED-JAW, CROSSED HANDLES.** The handles gripped by the hand cross each other.
- 80. WRENCHES, HAND-GRIP, PIVOTED-JAW, CROSSED HANDLES, NON-TRAVELING FULCRUM.** The fulcrum or pivot of the jaws has no movement relative to the parts connected by the fulcrum or pivot or to the fixed jaw.
- 81. WRENCHES, HAND-GRIP, PIVOTED-JAW, CROSSED HANDLES, NON-TRAVELING FULCRUM, PIVOTED GRIPPING-PIECE.** One or both of the jaw-levers carry pivoted jaw-pieces which engage the work.
- 82. WRENCHES, HAND-GRIP, PIVOTED-JAW, CROSSED HANDLES, NON-TRAVELING FULCRUM, SLIDING GRIPPING-PIECE.** One or both of the jaw-levers carry sliding jaw-pieces which engage the work.
- 83. WRENCHES, HAND-GRIP, PIVOTED-JAW, CROSSED HANDLES, SLOTTED FULCRUM-GUIDE.** The fulcrum of the jaws is adjustable along a slot.
- Search Class—**
81—TOOLS, subclass 109, Wrenches, Pivoted outer jaw, Traveling-fulcrum, Slotted guide.
- 84. WRENCHES, HAND-GRIP, PIVOTED-JAW, LINKED JAW AND HANDLES.** The jaws are closed by the operation of a link connecting the jaw and the handle.
- 85. WRENCHES, HAND-GRIP, SLIDING-JAW.** The grip of the hand causes one jaw to slide relatively to the other.
- 86. WRENCHES, HAND-GRIP, SLIDING-JAW, CLAW-LEVER AND RACK.** A lever having a tooth or claw engaging a rack to close the jaws, the rack having more than one tooth.
- Search Class—**
81—TOOLS, subclass 127, Wrenches, Sliding-jaw, Handle-lever grip, claw.

CLASS 81—Continued.

87. **WRENCHES, HAND-GRIP, SLIDING-JAW, LEVER AND CAM FEED.** A lever operates a cam which closes the jaws.
88. **WRENCHES, HAND-GRIP, SLIDING-JAW, LEVER AND LINK FEED.** A lever operates through a link connected thereto to close the jaws.
89. **WRENCHES, HAND-GRIP, SLIDING-JAW, LEVER AND PAWL FEED.** A lever operates a pawl connected thereto and engaging a rack to close the jaws.
90. **WRENCHES, SPANNERS.** Wrenches having shoulders, projections, or holes to engage with cooperating parts on the object to be turned, usually a pipe-coupling.
91. **WRENCHES, MULTIPLE PIVOTED JAWS, HANDLE-LEVER GRIP.** A plurality of pivoted jaws is caused to grip the work by the action of a handle-lever. A pull on the handle causes a grip on the work.
92. **WRENCHES, PIVOTED INNER JAW.** The inner jaw (the one nearest the hand) is pivoted and swings or rocks to grip or engage the work.
93. **WRENCHES, PIVOTED INNER JAW, NUT OR SCREW FULCRUM.** The inner jaw rocks or swings upon a nut or screw as its fulcrum.
94. **WRENCHES, PIVOTED INNER JAW, PIN-FULCRUM.** The inner jaw has a pin as its fulcrum.
95. **WRENCHES, PIVOTED INNER JAW, PIN-FULCRUM, ROLLER-JAW.** The pin-fulcrumed inner jaw is a disk or roller.
96. **WRENCHES, PIVOTED INNER JAW, PIN-FULCRUM, ROLLER-JAW, PINION.** The roller or disk-shaped jaw is toothed and travels on a rack on the handle.
97. **WRENCHES, PIVOTED INNER JAW, PIN-FULCRUM, SPRING-PRESSED.** The pin-fulcrumed inner jaw is pressed by a spring.
- WRENCHES, PIVOTED OUTER JAW.** The outer jaw (the one at the end of the handle or the one farthest from the hand) is pivoted or swings as on a pivot.
- WRENCHES, PIVOTED OUTER JAW, FIXED-FULCRUM.** The fulcrum on which the jaw swings does not travel relatively to either the fixed jaw or the parts which it connects.
98. **WRENCHES, PIVOTED OUTER JAW, FIXED-FULCRUM, NON-TRAVELING-JAW.** The outer jaw does not travel longitudinally or in a substantially right line to adjust itself to the size of the work.
99. **WRENCHES, PIVOTED OUTER JAW, FIXED-FULCRUM NON-TRAVELING-JAW, SPRING-PRESSED.** The outer jaw is pressed by a spring.
100. **WRENCHES, PIVOTED OUTER JAW, FIXED-FULCRUM, TRAVELING-JAW.** The outer jaw travels longitudinally or in a substantially right line to adjust itself to different sizes of work.
101. **WRENCHES, PIVOTED OUTER JAW, FIXED-FULCRUM, TRAVELING-JAW, NUT-FULCRUM.** The outer jaw swings or rocks on the adjusting-nut as a fulcrum.
102. **WRENCHES, PIVOTED OUTER JAW, FIXED-FULCRUM, TRAVELING-JAW, ROCKING-SLEEVE.** The outer jaw is carried by a rocking sleeve.
103. **WRENCHES, PIVOTED OUTER JAW, FIXED-FULCRUM, TRAVELING-JAW, ROCKING-SLEEVE, SPRING-PRESSED.** The rocking sleeve is spring-pressed.
104. **WRENCHES, PIVOTED OUTER JAW, FIXED-FULCRUM, TRAVELING-JAW, ROCKING-SLEEVE, SPRING-PRESSED, FULCRUM-WASHER.** The sleeve is a washer on which the nut is seated and on which the outer jaw rocks.
105. **WRENCHES, PIVOTED OUTER JAW, FIXED FULCRUM, TRAVELING-JAW, ROCKING-SLEEVE, SPRING-PRESSED, SLEEVE-INCLOSED NUT.** The sleeve wholly or partly incloses the adjusting-nut.
106. **WRENCHES, PIVOTED OUTER JAW, TRAVELING-FULCRUM.** The fulcrum-point of the outer jaw travels relatively to either the fixed jaw or the parts which it connects.
107. **WRENCHES, PIVOTED OUTER JAW, TRAVELING-FULCRUM, THREADED HANDLE-BAR.** The fulcrum is adjusted by a nut or screw working on a threaded handle-bar.
- Search Class—**
81—TOOLS, subclass 174, Wrenches, Sliding adjustments, Thread, Traveling-nut, Threaded handle-bar.
108. **WRENCHES, PIVOTED OUTER JAW, TRAVELING-FULCRUM, THREADED HANDLE-BAR, AXIALLY-ROTATING.** The fulcrum is adjusted by the axial rotation of a threaded handle-bar.
- Search Class—**
81—TOOLS, subclass 164, Wrenches, Sliding adjustments, Thread, Rotating threaded shank.

CLASS 81—Continued.

109. **WRENCHES, PIVOTED OUTER JAW, TRAVELING FULCRUM, SLOTTED GUIDE.** The fulcrum is adjustable in a slot in the shank of the fixed jaw.
- Search Class—**
81—TOOLS, subclass 83, Wrenches, Hand-grip, Pivoted-jaw, Crossed handles, Slotted fulcrum-guide.
110. **WRENCHES, PIVOTED OUTER JAW, TRAVELING-FULCRUM, FULCRUM-TOOTH AND RACK.** The fulcrum of the outer jaw is a tooth which is adjustable along teeth or notches on the shank of the fixed jaw.
111. **WRENCHES, PIVOTED SIDE-JAW.** One or both jaws swing sidewise of the handle to close upon the work, the meeting plane of the jaws, or the opening between the jaws when in their normal closed condition, lying on opposite sides of the central longitudinal line of the handle or of a line parallel thereto.
112. **WRENCHES, PIVOTED SIDE-JAW, BEVEL-CLOSING.** The relative movement of the jaws and the handle-body or of the jaws and the jaw-actuating device is along lines neither parallel nor perpendicular to the axis of the handle.
- Search Class—**
145—WOODWORKING-TOOLS, subclass 84, Handles, Socket-fastenings, Bevel-closing.
113. **WRENCHES, PIVOTED SIDE-JAW, BEVEL-CLOSING, AXIAL NUT OR SCREW.** The jaws are drawn back into a beveled socket or are thrust forward into a conical cap by an axially-moving nut or screw.
- Search Class—**
145—WOODWORKING-TOOLS, subclass 85, Handles, Socket-fastenings, Bevel-closing, Axial-screw.
114. **WRENCHES, PIVOTED SIDE-JAW, BEVEL-CLOSING, SCREW-RING.** An interiorly-threaded ring laterally surrounds the jaws and has a helical movement thereon.
- Search Class—**
145—WOODWORKING-TOOLS, subclasses 89, Handles, Socket-fastenings, Bevel closing, Screw-ring; and 90, Handles, Socket-fastenings, Bevel-closing, Screw-ring, Spring-retracted jaws.
115. **WRENCHES, PIVOTED SIDE-JAW, BEVEL-CLOSING, ROTATING-RING.** The jaws are closed by an unthreaded ring or collar, which embraces the jaws and cams them toward each other.
- Search Class—**
145—WOODWORKING-TOOLS, subclasses 87, Handles, Socket-fastenings, Bevel-closing, Rotating-ring, and 88, Handles, Socket-fastenings, Bevel-closing, Rotating-ring, Spring-retracted jaws.
116. **WRENCHES, PIVOTED SIDE-JAW, BEVEL-CLOSING, WEDGE.** One or both of the jaws are closed by a part which slides between the jaws or between the jaw and another part, producing a wedge-like action.
117. **WRENCHES, PIVOTED SIDE-JAW, ROCKING-LINK.** One or both of the jaws are closed by means of links which cause one or both of the jaws to travel longitudinally and inwardly.
118. **WRENCHES, PIVOTED SIDE-JAW, TRANSVERSE-SCREW CLAMP.** The jaws are closed by a screw located transversely of the axis of the tool.
119. **WRENCHES, RIGID JAWS.** The jaws or work-engaging parts have no relative movement.
120. **WRENCHES, RIGID JAWS, ROUND-WORK.** The jaws are specially adapted for grasping or clutching round work.
121. **WRENCHES, RIGID JAWS, INCLOSED.** The jaw has inclosing walls forming an opening which receives a nut or the like.
122. **WRENCHES, RIGID JAWS, INCLOSED, WATCH AND CLOCK KEYS.** Socketed tools for winding watches or clocks.
123. **WRENCHES, RIGID JAWS, INCLOSED, WATCH AND CLOCK KEYS, DUST-PROTECTORS.** The watch or clock keys have means for excluding dust from the sockets.
124. **WRENCHES, RIGID JAWS, INCLOSED, WATCH AND CLOCK KEYS, SAFETY.** The watch or clock keys have means to prevent the overwinding of the springs.
125. **WRENCHES, RIGID JAWS, INCLOSED, WORK-HOLDING.** The socket has means for holding a nut from dropping out.
126. **WRENCHES, SLIDING-JAW, HANDLE-LEVER GRIP.** The actuation of a handle-lever causes a sliding jaw to grip the work. A pull on the handle closes the jaws.
- Search Class—**
7—COMPOUND TOOLS, subclass 3, Type, Pliers, and the subclasses thereunder.
127. **WRENCHES, SLIDING-JAW, HANDLE-LEVER GRIP, CLAW.** The actuating-lever has a claw or tooth which claws or forces the sliding jaw to its work.
- Search Class—**
81—TOOLS, subclass 86, Wrenches, Hand-grip, Sliding-jaw, Claw-lever and rack.
7—COMPOUND TOOLS, subclass 3, Type, Pliers, and the subclasses thereunder.

CLASS 81—Continued.

128. **WRENCHES, SLIDING-JAW, CAM-CLOSING.** A cam is actuated to operate a sliding jaw or cooperates with said jaw to produce a sliding movement thereon.

Search Class—

81—TOOLS, subclass 26, Vises, Sliding-jaw, Cam.

129. **WRENCHES, SLIDING ADJUSTMENTS.** Means for adjusting sliding parts, as jaws, pivot-carrying blocks, etc.

130. **WRENCHES, SLIDING ADJUSTMENTS, RACK.** The adjustment is made by means of a rack which locks the parts from movement.

Search Class—

81—TOOLS, subclass 110, Wrenches, Pivoted outer jaw, Traveling-fulcrum, Fulcrum-tooth, and rack.

131. **WRENCHES, SLIDING ADJUSTMENTS, RACK, INTER-LOCKING JAW-HANDLES.** The jaws are carried by handles which interlock.

132. **WRENCHES, SLIDING ADJUSTMENTS, RACK, LOCKING SET SCREW OR NUT.** The jaws are locked by means of a set screw or nut which locks together the rack and its interlocking part.

133. **WRENCHES, SLIDING ADJUSTMENTS, RACK, PINION-LOCK.** A pinion which travels on a rack on the shank is locked so as to prevent movement of the pinion-carrier.

134. **WRENCHES, SLIDING ADJUSTMENTS, RACK, PIVOTED RACK-CATCH.** A pivoted device or a device moving as if on a pivot interlocks with a rack.

Search Class—

81—TOOLS, subclass 30, Vises, Rack-lock, Pivoted rack-catch.

135. **WRENCHES, SLIDING ADJUSTMENTS, RACK, PIVOTED RACK-CATCH, NON-TRAVELING.** The catch does not travel with the traveling-jaw.

Search Class—

81—TOOLS, subclass 30, Vises, Rack-lock, Pivoted rack-catch.

136. **WRENCHES, SLIDING ADJUSTMENTS, RACK, PIVOTED RACK-CATCH, NON-TRAVELING, INTERMEDIATE-FULCRUM.** The non-traveling catch has its pivot between its locking end and its operating part.

Search Class—

81—TOOLS, subclasses 30, Vises, Rack-lock, Pivoted rack-catch, and 140, Wrenches, Sliding adjustments, Pivoted rack-catch, Intermediate-fulcrum.

137. **WRENCHES, SLIDING ADJUSTMENTS, RACK, PIVOTED RACK-CATCH, TRANSVERSE.** The catch has its pivot or axis of movement lying longitudinally of the handle. It swings transversely of the interlocked rack.

Search Class—

81—TOOLS, subclasses 30, Vises, Rack-lock, Pivoted rack-catch; 159, Wrenches, Sliding adjustments, Thread, Interrupted; 160, Wrenches, Sliding adjustments, Thread, Interrupted, Nut-set, and 161, Wrenches, Sliding adjustments, Thread, Interrupted, Nut-set, Traveling-nut.

138. **WRENCHES, SLIDING ADJUSTMENTS, RACK, PIVOTED RACK-CATCH, CAM-SEATED.** The catch is forced by a cam into locking engagement with the rack.

139. **WRENCHES, SLIDING ADJUSTMENTS, RACK, PIVOTED RACK-CATCH, INDIRECTLY-OPERATED.** The catch is operated by a part not rigidly attached thereto.

140. **WRENCHES, SLIDING ADJUSTMENTS, RACK, PIVOTED RACK-CATCH, INTERMEDIATE-FULCRUM.** The catch moves on a pivot located between its locking end and its operating part.

Search Class—

81—TOOLS, subclass 136, Wrenches, Sliding adjustments, Rack, Pivoted rack-catch, Non-traveling, Intermediate-fulcrum.

141. **WRENCHES, SLIDING ADJUSTMENTS, RACK, SHANK-ENGAGED CAM.** A cam engages the shank and draws the rack and the teeth of its cooperating member together.

142. **WRENCHES, SLIDING ADJUSTMENTS, RACK, SLIDING RACK-CATCH.** A sliding catch interlocks with the rack of the sliding part.

Search Class—

81—TOOLS, subclass 31, Vises, Rack-lock, Sliding rack-catch.

143. **WRENCHES, SLIDING ADJUSTMENTS, RACK, SLIDING RACK-CATCH, CAM-SEATED.** A cam holds the catch in engagement with the rack.

Search Class—

81—TOOLS, subclass 31, Vises, Rack-lock, Sliding rack-catch.

144. **WRENCHES, SLIDING ADJUSTMENTS, RACK, SLIDING RACK-CATCH, SCREW OR NUT SEATED.** A screw or nut holds the catch in engagement with the rack.

Search Class—

81—TOOLS, subclass 31, Vises, Rack-lock, Sliding rack-catch.

145. **WRENCHES, SLIDING ADJUSTMENTS, RACK, SLIDING RACK-CATCH, SPRING-SEATED.** A spring forces the catch into engagement with the rack.

Search Class—

81—TOOLS, subclass 31, Vises, Rack-lock, Sliding rack-catch.

CLASS 81—Continued.

146. **WRENCHES, SLIDING ADJUSTMENTS, RACK, SPRING-SEATED JAW-FRAME.** A spring presses the teeth of a jaw carrying frame into engagement with teeth on the shank of the other jaw.

Note.—This subclass includes only those jaw-frames whose teeth are not integral therewith.

147. **WRENCHES, SLIDING ADJUSTMENTS, RACK, SPRING-SEATED JAW-FRAME, INTEGRAL, FRAME AND TEETH.** The frame and the teeth are integral.

148. **WRENCHES, SLIDING ADJUSTMENTS, RACK, WEDGE-LOCK.** A wedge forces the teeth of one part into locking engagement with the other.

Search Class—

81—TOOLS, subclass 154, Wrenches, sliding adjustments, Shank-grip, Locking-incline.

149. **WRENCHES, SLIDING ADJUSTMENTS, RACK, WEDGE-LOCK, WEDGE-PUSHER.** A special part not rigidly attached to the wedge moves the latter.

Search Class—

81—TOOLS, subclass 154, Wrenches, Sliding adjustments, Shank-grip, Locking-incline.

150. **WRENCHES, SLIDING ADJUSTMENTS, SHANK-GRIP.** The traveling jaw is locked to the shank by a gripping or clamping action.

151. **WRENCHES, SLIDING ADJUSTMENTS, SHANK-GRIP, SIDE-JAW.** The traveling jaw moves sidewise of the shank, the plane of the meeting faces of the jaws lying on opposite sides of the longitudinal axis of the handle or of a line parallel thereto.

152. **WRENCHES, SLIDING ADJUSTMENTS, SHANK-GRIP, CLUTCH-YOKE.** A yoke or ring-like device has a portion which grips or bites the shank to lock the traveling jaw.

153. **WRENCHES, SLIDING ADJUSTMENTS, SHANK-GRIP, ROLLER-CLUTCH.** The traveling jaw is locked by gripping or clutching action of a roller upon the shank.

154. **WRENCHES, SLIDING ADJUSTMENTS, SHANK-GRIP, LOCKING-INCLINE.** The traveling jaw is locked to the shank by one or more inclines.

Search Class—

81—TOOLS, subclasses 148, Wrenches, Sliding adjustments, Rack, Wedge-lock, and 149, Wrenches, Sliding adjustment, Wedge-lock, Wedge-pusher.

155. **WRENCHES, SLIDING ADJUSTMENTS, THREAD.** The sliding part is adjusted by means of a threaded device.

156. **WRENCHES, SLIDING ADJUSTMENTS, THREAD, DISPLACEABLE HALF-NUT.** The nut is made of sections which move away from the screw or of a single section which partially surrounds the screw and moves away from the screw in order to make a quick adjustment.

157. **WRENCHES, SLIDING ADJUSTMENTS, THREAD, DISPLACEABLE NUT OR SCREW.** The nut or screw is separated bodily from its cooperating member to provide a quick adjustment.

Search Class—

81—TOOLS, subclasses 36, Vices, Screw-operated, Displaceable nut or screw, and 137, Wrenches, Sliding adjustments, Rack, Pivoted rack-catch, Transverse.

158. **WRENCHES, SLIDING ADJUSTMENTS, THREAD, DISPLACEABLE NUT OR SCREW, TRAVELING-SCREW, SHANK-RACK.** The screw is carried by the traveling jaw and is moved away from its cooperating member which is a rack on the shank, to provide a quick adjustment.

Search Class—

81—TOOLS, subclasses 36, Vices, Screw-operated, Displaceable nut or screw, and 176, Wrenches, Sliding adjustments, Tread, Traveling-screw, Shank-rack.

159. **WRENCHES, SLIDING ADJUSTMENTS, THREAD, INTERRUPTED.** A portion of the threads are removed from cooperating parts, so that by registering the removed portion of one part with the full portion of the other a quick adjustment is provided.

Search Class—

81—TOOLS, subclass 37, Vices, Screw-operated, Interrupted-thread.

160. **WRENCHES, SLIDING ADJUSTMENTS, THREAD, INTERRUPTED, NUT-SET.** An interiorly-threaded device is operated to lock and advance the jaw at the time of locking.

Search Class—

81—TOOLS, subclasses 37, Vices, Screw-operated, Interrupted-thread, and 137, Wrenches, Sliding adjustment, Rack, Pivoted rack-catch, Transverse.

161. **WRENCHES, SLIDING ADJUSTMENTS, THREAD, INTERRUPTED, NUT-SET, TRAVELING-NUT.** The nut is secured to the traveling jaw.

Search Class—

81—TOOLS, subclasses 37, Vices, Screw-operated, Interrupted-thread, and 137, Wrenches, Sliding adjustments, Rack, Pivoted rack-catch, Transverse.

CLASS 81—Continued.

162. WRENCHES, SLIDING ADJUSTMENTS, THREAD, INTERRUPTED, TRAVELING-SCREW, SHANK-RACK. An externally-threaded device secured to the traveling jaw is operated in connection with rack-like threads on the shank of the fixed jaw.

Search Class—

81—TOOLS, subclasses 37, Vices, Screw-operated, Interrupted-thread, and 176, Wrenches, Sliding adjustments, Thread, Traveling-screw, Shank-rack.

163. WRENCHES, SLIDING ADJUSTMENTS, THREAD, RIGHT AND LEFT THREADS. The sliding part of parts are adjusted by the actuation of a device having right and left threads.

Search Class—

81—TOOLS, subclass 35, Vices, Screw-operated, Right and left threads.

164. WRENCHES, SLIDING ADJUSTMENTS, THREAD, ROTATING THREADED SHANK. The sliding part is adjusted by the axial rotation of a threaded handle.

Search Class—

81—TOOLS, subclasses 108, Wrenches, Pivoted outer jaw, Traveling-fulcrum, Threaded handle-bar, Axially-rotating, and 192 Pipe and rod cutters, Traveling, External, Thread, Feed, Rotary-handle.

165. WRENCHES, SLIDING ADJUSTMENTS, THREAD, SLIDING SIDE-JAW. The sliding jaw has amovement transverse of the shank supporting it.

WRENCHES, SLIDING ADJUSTMENTS, THREAD, NON-TRAVELING NUT. An interiorly-threaded device having no travel is operated to adjust the sliding part.

166. WRENCHES, SLIDING ADJUSTMENT, THREAD, NON-TRAVELING NUT, INTERMEDIATE. The actuating-nut is seated between the jaws and the end of the handle.

Search Class—

81—TOOLS, subclass 168, Wrenches, Sliding adjustments, Thread, Non-traveling nut, Terminal.

167. WRENCHES, SLIDING ADJUSTMENTS, THREAD, NON-TRAVELING NUT, INTERMEDIATE, SLIDING OUTER JAW. The outer jaw is adjusted by the actuation of a nut between jaws and the end of the handle.

Note.—Where the nut is used as the fulcrum of a swinging outer jaw, see in this class, subclass 101, Wrenches, Pivoted outer jaw, Fixed-fulcrum, Traveling-jaw, Nut-fulcrum.

Note.—Where the nut is carried on a rocking washer, see in this class, subclass 104, Wrenches, Pivoted outer jaw, Fixed-fulcrum, Traveling-jaw, Rocking-sleeve, Spring-pressed, Fulcrum-washer.

Note.—Where the nut is carried in a rocking sleeve which guides an outer jaw, see in this class, subclass 105, Wrenches, Pivoted outer jaw, Fixed-fulcrum, Traveling-jaw, Rocking-sleeve, Sleeve-inclosed nut.

Search Class—

81—TOOLS, subclass 169, Wrenches, Sliding adjustments, Thread, Non-traveling nut, Terminal, Sliding outer jaw.

168. WRENCHES, SLIDING ADJUSTMENTS, THREAD, NON-TRAVELING NUT, TERMINAL. The actuating nut is seated at the end of the handle.

Note.—Where the nut is used as the fulcrum of a swinging outer jaw, see in this class, subclass 101, Wrenches, Pivoted outer jaw, Fixed-fulcrum, Traveling-jaw, Nut-fulcrum.

Note.—Where the nut is carried on a rocking washer, see in this class, subclass 104, Wrenches, Pivoted outer jaw, Fixed-fulcrum, Traveling-jaw, Rocking-sleeve, Spring-pressed, fulcrum-washer.

Note.—Where the nut is carried on a rocking sleeve which guides an outer jaw, see in this class, subclass 105, Wrenches, Pivoted outer jaw, Fixed-fulcrum, Traveling-jaw, Rocking-sleeve, Sleeve-inclosed nut.

Search Class—

81—TOOLS, subclass 166, Wrenches, Sliding adjustments, Thread, Non-traveling nut, Intermediate.

169. WRENCHES, SLIDING ADJUSTMENTS, THREAD, NON-TRAVELING NUT, TERMINAL, SLIDING OUTER JAW. The outer jaw is adjusted by the actuation of a nut at the end of the handle.

Search Class—

81—TOOLS, subclass 167, Wrenches, Sliding adjustments, Thread, Non-traveling nut, Intermediate, Sliding outer jaw.

170. WRENCHES, SLIDING ADJUSTMENTS, THREAD, NON-TRAVELING SCREW. An exteriorly-threaded device having no longitudinal movement is actuated to adjust the sliding part.

171. WRENCHES, SLIDING ADJUSTMENTS, THREAD, NON-TRAVELING SCREW, BRACKET-BEARING. The screw has its bearing in or on a bracket, usually on or a part of the upper end of the handle proper.

Note.—Where the screw is used as the fulcrum of an inner jaw, see in this class, subclass 93, Wrenches, Pivoted inner jaw, Nut or screw fulcrum.

172. WRENCHES, SLIDING ADJUSTMENTS, THREAD, NON-TRAVELING SCREW, SHANK-SLEEVED. The screw is a sleeve which surrounds the shank of the fixed jaw.

173. WRENCHES, SLIDING ADJUSTMENTS, THREAD, TRAVELING-NUT. An interiorly-threaded device carried by the sliding part is actuated to secure an adjustment.

CLASS 81—Continued.

174. WRENCHES, SLIDING ADJUSTMENTS, THREAD, TRAVELING-NUT, THREADED HANDLE-BAR. The actuating-nut coöperates with threads upon the handle-bar.

Note.—Where the nut is used as the fulcrum of an inner jaw, see in this class, subclass 93, Wrenches, Pivoted inner jaw, Nut or screw fulcrum.

Search Class—

81—TOOLS, subclass 107, Wrenches, Pivoted outer jaw, Traveling-fulcrum, Threaded handle-bar.

175. WRENCHES, SLIDING ADJUSTMENTS, THREAD, TRAVELING-SCREW. An exteriorly-threaded device travels longitudinally to make an adjustment.

176. WRENCHES, SLIDING ADJUSTMENTS, THREAD, TRAVELING-SCREW, SHANK-RACK. The actuating, screw travels with the sliding part and coöperates with rack-like threads upon the shank.

Search Class—

81—TOOLS, subclasses 158, Wrenches, Sliding adjustments, Thread, Displaceable nut or screw, Traveling-screw, Shank-rack, and 162, Wrenches, Sliding adjustments, Thread, Interrupted, Traveling-screw, Shank-rack.

177. WRENCHES, HANDLES AND SHANKS. Wrenches having novelty in the handle or the shank.

Search Class—

81—TOOLS, subclass 171, Wrenches, Sliding adjustments, Thread, Non-traveling screw, Bracket-bearing.

178. WRENCHES, REVERSIBLE JAWS. The jaws are reversible to bring a new part into operative position.

179. WRENCHES, SLIDING JAW-FACE. The jaw or jaws are provided with a sliding jaw-face which moves in some degree transversely of the shank.

180. WRENCHES, ATTACHMENTS AND ADJUNCTS. Parts which are exchangeable for other parts, as jaw-pieces, cutters, and the like, or are added to improve wrenches as such.

Note.—Attachments and adjuncts, except cutters, pumps, and oilers, which are added to wrenches to give them a function other than that of wrenches, are classified in class 7, COMPOUND TOOLS.

Note.—For adjuncts holding a nut from dropping out of a wrench see in this class, subclass 125, Wrenches, Rigid jaws, Inclosed, Work-holding.

181. WRENCHES, ATTACHMENTS AND ADJUNCTS, CUTTERS. Attachments and adjuncts which are applied to wrenches to convert them into cutters and which are so combined with the wrench that the parts which operate the jaws of the wrench are employed for applying the necessary pressure to the cutters.

Note.—Cutters of a general nature applied to various parts of the wrench, but not coming within the above definition, are found in class 7, COMPOUND TOOLS.

182. WRENCHES, ATTACHMENTS AND ADJUNCTS, CUTTERS, ROTARY. The cutters are rotary disks or the like.

183. WRENCHES, ATTACHMENTS AND ADJUNCTS, ROLLER-CLUTCH. Rollers added to wrench-jaws and causing a clutch-grip on the work.

184. WRENCHES, ATTACHMENTS AND ADJUNCTS, SHANK-EMBRACING. The attachment is sleeved upon or partially embraces the shank of the wrench.

185. WRENCHES, ATTACHMENTS AND ADJUNCTS, SOCKET-REDUCERS. Attachments for reducing the size of wrench-sockets.

186. WRENCHES, JAW-FACES. Inventions relating to the surface structure of the jaws.

187. PIPE AND ROD CUTTERS. Tools for cutting pipes and rods.

Note.—Shears for cutting wire are in class 30, CUTLERY, subclass 17, Wire-shears.

Note.—Cutters combined with wrenches in which the jaw-operating parts supply the power for bringing the cutters into operation are found in this class, subclass 181, Wrenches, attachments and adjuncts, cutters.

Note.—Tools for cutting sheets and bars are in class 164, CUTTING AND PUNCHING SHEETS AND BARS.

188. PIPE AND ROD CUTTERS, NON-TRAVELING, INTERNAL. Tools having the cutting-blade inside of a tube or the like, the part carrying the cutter having no travel relative to the tube.

189. PIPE AND ROD CUTTERS, TRAVELING, EXTERNAL. The cutting portion of the tool operates externally of a cylinder or tube to be cut and travels circumferentially about it.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 110, Screw threading implements, Dies, combined cutting-off and threading.

190. PIPE AND ROD CUTTERS, TRAVELING, EXTERNAL, GEAR-OPERATED. The cutter is by means of gearing caused to travel circumferentially about a bar or tube.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 110, Screw threading implements, Dies, combined cutting-off and threading.

CLASS 81—Continued.

191. PIPE AND ROD CUTTERS, TRAVELING, EXTERNAL, THREAD-FEED. The cutter is fed by a threaded device during the travel thereof.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 110, Screw threading implements, Dies, combined cutting-off and threading.

192. PIPE AND ROD CUTTERS, TRAVELING, EXTERNAL, THREAD-FEED, ROTARY HANDLE. By axially rotating the handle a threaded device feeds the cutter into the work.

Search Classes—

81—Tools, subclass 164, Wrenches, Sliding adjustments Thread, Rotating threaded shank.

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 110, Screw threading implements, Dies, combined cutting-off and threading.

193. PIPE AND ROD CUTTERS, TRAVELING, INTERNAL. The cutting portion of the tool operates inside of a pipe to be cut and its carrier travels relatively to the pipe.

194. PIPE AND ROD CUTTERS, TRAVELING, INTERNAL, ROTARY. The cutter travels about the pipe to make a cut transverse of its axis.

195. PIPE AND ROD CUTTERS, TRAVELING, INTERNAL, ROTARY, WEDGE-FEED. A wedge feeds the cutter to its work.

196. PIPE AND ROD CUTTERS, PIVOTED. The cutter is carried by a pivoted part.

Search Class—

7—COMPOUND TOOLS, subclass 3, Type, Pliers, and the subclasses thereunder.

197. PIPE AND ROD CUTTERS, PIVOTED, CAM. The cutter-jaws are closed by the actuation of a cam.

Search Class—

7—COMPOUND TOOLS, subclass 3, Type, Pliers, and the subclasses thereunder.

CLASS 81—Continued.

198. PIPE AND ROD CUTTERS, PIVOTED, HANDLE-JAWS. The cutting-jaws are carried rigidly by the handles, as in the common nippers or wire-cutters.

Search Class—

7—COMPOUND TOOLS, subclass 3, Type, Pliers, and the subclasses thereunder.

199. PIPE AND ROD CUTTERS, PIVOTED, TOGGLE. The jaws are closed by the actuation of a toggle.

200. PIPE AND ROD CUTTERS, PIVOTED, INTERGEARED HANDLES. The handles are geared together, so as to cause a simultaneous movement of the jaws.

201. PIPE AND ROD CUTTERS, SLIDING. The cutting blade or blades slide in a substantially right line.

202. PIPE AND ROD CUTTERS, SLIDING, CAM. The sliding jaw is actuated by a cam.

203. PIPE AND ROD CUTTERS, SLIDING, HEAD AND SOCKET. The sliding jaw is actuated by the movement of a head in a socket. The head in most cases is carried by a lever and fits a spcket in the cutter-bar.

204. PIPE AND ROD CUTTERS, SLIDING, LEVER AND LINK. The sliding jaw is actuated by the coöperation of a lever and a link.

205. PIPE AND ROD CUTTERS, SLIDING, RACK AND SEGMENT. The sliding jaw is actuated by the coöperation of a rack and a segment, the former usually carried by the blade and the latter by a lever.

206. PIPE AND ROD CUTTERS, JAW ATTACHMENTS. Parts attached to the jaw-holders and capable of replacement by other parts when the original parts are dull or worn out or when a jaw-piece of a different character is desired.

CLASS 82.—TURNING.

DEFINITIONS.

Class.

This class includes inventions for producing articles of predetermined section, usually circular, by means of cutters brought into engagement with the exterior of a rotating work-piece or by means of cutters revolving circumferentially around, and in engagement with that portion of the work-piece to be shaped. It contains mainly metal-working machines, but is not confined thereto, including all such mechanisms of the above-named structure and function as are not specifically classified elsewhere.

Search Classes—

73—BUTTON-MAKING, subclass 7, Surfacing and subclasses thereunder.

125—STONE WORKING, subclass 6, Dressing stone.

142—WOOD-TURNING.

181—ACOUSTICS, subclass 15, Tablets, Turning and smoothing.

Subclasses.

1. MISCELLANEOUS. Various turning devices, not organized lathes, and turning processes for producing articles of circular cross-section.
2. LATHES. Organized machines and devices for producing articles of regular section, usually circular, by means of work-supports and guided cutters, with mechanism for effecting a relative rotation between the cutters and the work; also, details of such machines.
3. LATHES, MULTIPLE. Lathes for operating simultaneously on more than one piece of work. The operations are usually the same on each piece.
4. LATHES, PORTABLE. Lathes, usually hand-driven, readily transported and attached to axles, crank-pins, commutators, and other parts to be turned or trued.
5. LATHES, SCREW-CUTTING. Organized machines of the "engine-lathe" type having feed mechanism adapted to vary the rate of tool travel to cut screws of various pitches.
5. LATHES, SCREW-CUTTING, SWINGING FEED-NUT AND TOOL-BAR. Lathes in which the lead-screw is integral with the head-stock spindle or rotatively mounted on a stud projecting from the head-stock end of the bed and geared to said spindle in such position as to be readily engaged by a sectional nut at the end of a lever whose opposite end is attached to a rocking "chaser-bar," usually at the back of the bed, and carrying at another point of its length a second lever upon which is mounted the threading-tool.
6. LATHES, BENCH. Light lathes without legs, mainly designed for jeweler's and watchmaker's use.
7. LATHES, PULLEY. Lathes especially designed for rotating and facing pulleys. They generally include special driving means and means for crowning the pulley-face.
8. LATHES, WHEEL AND AXLE. Organized machines for turning heavy wheels and axles, usually those of railway rolling-stock.

Search Class—

82—TURNING, subclass 4, Lathes, Portable, for devices for finishing or re-turning worn wagon-axes.

9. LATHES, CRANK AND CRANK-PIN. Lathes particularly designed for rotating cranks and crank-disks concentrically to turn the main journals or eccentrically to turn the crank-pin, or machines with offset revolving tools for turning crank-pins held stationary, but eccentric with respect to the lathe-centers.

Note.—This subclass includes only fully-organized power-driven machines. Portable pin-turners, usually hand-driven and clamped to the work to be turned, are classified in subclass 4, Lathes, Portable.

10. LATHES, CRANK AND CRANK-PIN, OSCILLATING WORK. Machines mainly for turning cross-head pins designed to rotate through a portion of the circumference only of such work as the tool can not pass entirely around.
11. AXIAL PATTERN. Machines for producing articles of circular cross-section and of varying axial section other than cylindrical or conical forms.
12. AXIAL PATTERN, PIVOTED TOOL-REST. Machines in which the axial outline is traced by a tool rotating about an axis at right angles to the axis of the work. It mainly comprises lathes for turning spheres, though in some cases the tool traces a curve convex toward the work-axis.
13. AXIAL PATTERN, PROFILED CUTTER. Machines for producing articles the axial section of which is predetermined by that of a formed cutter or series of juxtaposed cutters.

CLASS 82—Continued.

14. AXIAL PATTERN, TEMPLET—GUIDE. Machines in which the axial pattern is produced by a tool the transverse movements of which are controlled by a templet.

TAPERS. Machines for producing conical surfaces in which the elements of the cone are usually at a comparatively small angle to the axis of the work.

15. TAPERS, OFFSET WORK-AXIS. Machines in which the axis of the rotating work is at a slight angle to the line of feed, the tool or work having a simple straight-line feed only.

16. TAPERS, TRANSVERSELY-SHIFTED CUTTER, GEAR-CONTROLLED. Machines in which a conical surface is generated by giving the cutting-tool a compound feed, one parallel to the axis of the work and the other at right angles thereto, the latter feed being governed by a gear-train.

17. TAPERS, TRANSVERSELY-SHIFTED CUTTER, TEMPLET-CONTROLLED. Machines like the last preceding in which the transverse feed of the cutter is governed by a fixed templet and connections between said templet and cutter or cutter-support.

18. PATTERN-SECTION. Machines for producing articles of predetermined noncircular section, usually by giving the cutter a motion radial with respect to the rotating work in addition to its usual feed motion.

19. PATTERN-SECTION, CAM-CONTROLLED CUTTER. Machines in which the radially-reciprocating motion of the cutter is governed by a cam.

20. LATHES, HOLLOW CUTTER-HEAD. Machines having rotating or stationary cutter-heads for supporting the cutters radially with their cutting ends toward the axis of the work and means for effecting relative rotation and axial feed between cutters and work.

Search Class—

82—TURNING, subclasses 35, Rests, Tool and work; and 4, Lathes, Portable.

21. LATHES, CARRIAGE-FEEDS. All details of lathes instrumental in giving the cutting-tool either longitudinal or transverse feed or in limiting such feeds.

22. LATHES, CARRIAGE-FEEDS, APRON MECHANISM. All gearing or feed-controlling mechanism attached to or covered by the apron secured to the lathe-carriage and special thereto.

23. LATHES, CARRIAGE-FEEDS, APRON MECHANISM, FEED-NUT CONTROLLERS. Devices for closing the feed-nut upon the feed-screw or releasing it therefrom; also, for preventing the closing of the nut except in certain positions to insure "catching the thread" correctly with the tool in screw-threading.

24. LATHES, CARRIAGE-FEEDS, SLIDE-RESTS. Tool-supporting devices, usually mounted upon the lathe-carriage and longitudinally movable with it, for giving to the tool an additional feed, ordinarily one transverse to the axis of the work.

25. LATHES, CARRIAGE-FEEDS, SLIDE-RESTS, MULTIPLE TOOL-SUPPORT. Devices like the preceding, but carrying a plurality of cutting-tools, usually located on opposite sides of the axis of the work.

26. LATHES, CARRIAGE-FEEDS, CHANGE-GEARS. Sets of gears and provisions for mounting and shifting them in order to change the speed of rotation of the feed-screw or other carriage-driving means, and consequently the rate of carriage-feed.

27. LATHES, CARRIAGE-FEEDS, FEED-SCREWS AND RODS. Mechanisms, usually in the form of rotating screws or splined rods, for transmitting motion from the head-stock or change-gears to the carriage to effect the necessary tool-feeds.

Search Class—

82—TURNING, subclass 5, Lathes, Screw-cutting.

28. LATHES, HEAD-STOCKS. General features and miscellaneous improvements in devices for supporting one end of the work-piece and for rotating it.

29. LATHES, HEAD-STOCKS, SPEED-CHANGING GEAR. Devices for giving variable rotation to the chuck or face-plate for a given rotation of the cone-pulley; ordinarily, back-gears. Note.—This subclass includes only such devices as are specifically designed for lathes and not for general application.

Search Classes—

74—MACHINE ELEMENTS, appropriate subclasses under Gearing.
77—BORING AND DRILLING, subclass 35, Drilling machines, Back gears.

CLASS 82—Continued.

30. LATHES, HEAD-STOCKS, SPINDLES, AND BEARINGS. The title sufficiently defines the subclass.
31. LATHES, TAIL-STOCKS. Devices for securing and rotatably supporting the end of the work-piece remote from the head-stock or driving end of the lathe.
32. LATHES, BEDS. Structure of the frame and ways of the lathe.
33. LATHES, CENTERS. Devices secured in the head-stock or tail-stock to rotatably support the work.
Search Class—
 142—WOOD-TURNING, subclass 53, Lathe centers.
34. LATHES, ATTACHMENTS. Miscellaneous devices secured to lathes for facilitating their manipulation, increasing their accuracy, etc.
- RESTS. Devices for securing or supporting the cutting-tool or the work, or both, during the turning operation.
35. RESTS, TOOL AND WORK. Devices for simultaneously supporting both the tool and the work upon which it operates.
Search Class—
 82—TURNING, subclass 20, Lathes, hollow cutter-head.
36. RESTS, TOOL. Devices for supporting lathe-tools held in the hand or for clamping them and effecting their rectilinear vertical adjustment or angular adjustment in a vertical plane.
Search Class—
 82—TURNING, subclass 35, Rests, Tool and work.
37. RESTS, TOOL, TOOL-POSTS. The immediate clamping means for securing the tool or cutter of a lathe. These devices include adjusting means only when the adjustment is effected by unclamping and reclamping the cutter itself.
38. RESTS, WORK. Miscellaneous devices for supporting work in a lathe: either the free end of a piece of stock or the side opposite the cutting-tool, to receive the thrust of the tool, or for other purposes.
39. RESTS, WORK, CENTER RESTS. Devices secured to the bed or ways of a lathe and provided with a bushing or with centering-jaws in axial alinement with the work supported between the centers, to prevent springing of the work from the thrust of the cutter.
Search Class—
 82—TURNING, subclass 45, Centerers.
40. WORK-DRIVERS. Miscellaneous devices for transmitting the rotary motion of the lathe-spindle to the work held between the centers.
Search Class—
 29—METAL-WORKING, subclass 107, Machine-chucks and tool-sockets, and subclasses thereunder.
41. WORK-DRIVERS, LATHE-DOGS. Driving devices which grip the work to be rotated and have a spur or other driving-connection which loosely engages a slot or other rotating portion of the face-plate or spindle.
42. WORK-DRIVERS, LATHE-DOGS, CAM-GRIP. Dogs which have cam-surfaces engaging the work to be driven in such a manner that rotation in the working direction causes the cam to grip the work the more firmly.

CLASS 82—Continued.

- Search Class—**
 29—METAL-WORKING, subclass 124, Machine-chucks and tool-sockets, Cam-closing.
43. WORK-DRIVERS, MANDRELS. Devices placed between the centers of the lathe and driving hollow work-pieces by engaging their interior surfaces.
44. WORK-DRIVERS, MANDRELS, EXPANSIBLE. Mandrels having work-engaging pieces capable of radial adjustment to center the work and secure driving contact therewith.
Search Classes—
 21—CARRIAGES AND WAGONS, subclass 31, Hubs.
 113—SHEET-METAL WARE, MAKING, subclass 103, Soldering, Clamps, Expanding mandrel.
 242—WINDING AND REELING, subclasses 63, Reeling and unreeling, Fabric, automatically-contracting reel; 72, Reeling and unreeling, Fabric cores and holders, contractile; 110, Reeling and unreeling, Reels, contractile, and subclasses thereunder.
45. CENTERERS. Devices for determining the centers or axes of work-pieces preparatory to mounting them on lathe-centers or for bringing such axes into coincidence with the line joining the lathe-centers after the work-pieces have been placed in the lathe.
Search Classes—
 82—TURNING, subclass 29, Rests, Work, Centerrests.
 29—METAL-WORKING, subclass 107, Machine-chucks and tool-sockets.
 77—BORING AND DRILLING, subclass 18, Drilling-Machines, Center-drills.
46. CENTERERS, CAM-CLOSING. Centerers in which the centering-pieces are moved inward by cam-surfaces, usually of the scroll type.
Search Class—
 29—METAL-WORKING, subclass 124, Machine-chucks and tool-sockets, cam-closing.
47. CENTERERS, COUPLED V-JAWS. Devices in which the center of the work-piece is determined or indicated by jaws which approach the piece from opposite sides and have approximately V-shaped recessed ends between which the work-piece is held by the jaw-coupling means.
Search Class—
 29—METAL-WORKING, subclass 135, Machine-chucks and tool-sockets, Transverse-screw closing, Opposite-coupled jaws.
48. CENTERERS, HOLLOW-CONE. Devices in which the center-marking means is located coaxially with a hollow cone, which is placed over the end of the piece to be centered.
49. CENTERERS, PIVOTED-LEVER AND CONE. Centerers in which a series of circumferentially-arranged pivoted levers are closed equally upon the piece to be centered by an axially-moving cone.
Search Class—
 29—METAL-WORKING, subclass 130, Machine-chucks and tool-sockets, Lever-closing, Cone.
50. CENTERERS, PIVOTED-LINK. Devices in which a series of surrounding pivoted links are caused to move equally toward the axis of the device until they impinge upon the work-piece.
51. Abolished.

CLASS 85.—DRIVEN, HEADED, AND SCREW-THREADED FASTENINGS.

DEFINITIONS.

Class.

This class contains such bolts, rivets, nails, screws, and other fastenings as are adapted to general use and not so limited to special articles or structures as to require special classification. It also includes washers which though not covered by the class title are so closely allied in use as to render separate classification inexpedient.

Subclasses.

1. **BOLTS.** Fastenings designed either to be passed through two or more pieces to be secured together and having a separate locking device, as a nut, or those having a threaded or otherwise-prepared shank which engages a correspondingly-prepared recess in one of the pieces to be secured.

- 1.5. **BOLTS, STAY.** Bolts, together with the necessary coating sleeves or spacing members for securing two or more plates or members spaced apart. Devices known as boiler stay bolts are classified here.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 496, Crown sheets and stays, for combinations with the boiler structure.

2. **BOLTS, EXPANDING-CORE.** Bolts having a hollow shank to receive a conical expanding piece, either threaded or plain, to firmly secure the bolt or its nut in place.

Search Class—

85—DRIVEN, HEADED, AND SCREW-THREADED FASTENINGS, subclass 6, Bolts, Threadless, Axial-wedge.

- 2.4. **BOLTS, EXPANDING-SLEEVE.** Fastening devices often used for securing structures to masonry walls, comprising a central securing part and surrounding devices, either separated or adjustably secured together, adapted to be radially expanded by the longitudinal movement of the interior bolt or nut.

Note.—They are distinguished from subclass 2, Bolts, Expanding-core, in that the head, nut, or other article-holding means is here integral with or secured to the interior expanding means, while in 2, Bolts, Expanding-core, the securing device is itself expanded.

- 2.8. **BOLTS, EXPANDING - SLEEVE, DOUBLE - WEDGE.** Devices similar to those in subclass 2.4, Bolts, Expanding-sleeve, in which the sleeve is expanded by the cooperation of two wedges or cones which travel axially toward or from each other.

3. **BOLTS, PIVOTED END-LOCK.** Bolts having a locking piece or pieces so pivoted at or near one end that the locking device may be swung transversely of the bolt-axis to secure the bolt or into axial alignment therewith to permit its withdrawal.

4. **BOLTS, LAPPED.** Bolts having similar headed halves or parts which are passed in from opposite sides of the material to be fastened and are lapped and secured either within the material or on opposite sides thereof.

5. **BOLTS, THREADLESS.** Bolts without a helical thread, but of such contour as to be secured by partial rotation, or having additional threadless securing means.

6. **BOLTS, THREADLESS, AXIAL - WEDGE.** Bifurcated threadless bolts secured in place by a wedge-shaped piece thrust into the slot in the bolt-body. They are distinguished from Bolts, expanding-core, in that the bolt body or shank is cleft from side to side, and the expander is a wedge substantially as wide as the bolt shank instead of conical.

Search Class—

85—DRIVEN, HEADED, AND SCREW-THREADED FASTENINGS, subclass 2, Bolts, Expanding-core.

7. **BOLTS, THREADLESS, KEY-LOCK.** Bolts secured in place by a transverse key, cotter, or pin instead of a nut.

8. **BOLTS, THREADLESS, KEY-LOCK, BIFURCATED.** Key or cotter locked bolts in which a bifurcated key passes astride the shank of the bolt instead of through an opening therein.

9. **BOLTS, HEADS.** Modifications in the head of the bolt, usually with a view to preventing its rotation when the nut is screwed on.

10. **NAILS, SPIKES, AND TACKS.** Fastenings designed to be driven by repeated blows or by nailing-machines and laterally displacing the material into which they are forced. They retain their hold by friction alone, by clenching, or by additional locking means.

Search Class—

39—FENCES, subclass 12, Wire, Fasteners, and subclasses thereunder.

CLASS 85—Continued.

11. **NAILS, SPIKES, AND TACKS, SHEET-METAL.** Fastening devices cut or stamped from sheet metal and frequently corrugated, folded, or rolled longitudinally to increase their rigidity.

Search Class—

85—DRIVEN, HEADED, AND SCREW-THREADED FASTENINGS, subclass 15, Nails, spikes, and tacks, Glaziers' points.

12. **NAILS, SPIKES, AND TACKS, HORSESHOE - NAILS.** The title defines the class.

13. **NAILS, SPIKES, AND TACKS, MULTIPLE-PRONGED.** Fastenings with two or more prongs, usually designed to enter the material at or near the same point, and distinguished from staples in that they are not adapted to span and secure between two of the holding-points a separate piece of material.

14. **NAILS, SPIKES, AND TACKS, DOUBLE-ENDED.** Nails or dowels intended to be driven for a part of their length and then have another piece of material driven or forced upon the protruding end.

Search Class—

85—DRIVEN, HEADED, AND SCREW-THREADED FASTENINGS, subclass 42, Screws, Double-ended.

15. **NAILS, SPIKES, AND TACKS, GLAZIERS' POINTS.** Fastenings, usually of sheet metal, for securing panes of glass in sash-frames.

16. **NAILS, SPIKES, AND TACKS, TACKS.** Small driven fastenings, usually adapted for securing carpets, etc.

17. **NAILS, SPIKES AND TACKS, TACKS, STRIPS.** Wires or strips of metal bent or cut into a series of tacks adapted to be separated as driven. These strips differ from string-nails in that the tacks are joined side by side instead of end to end.

Search Class—

85—DRIVEN, HEADED, AND SCREW-THREADED FASTENINGS, subclass 18, Nails, spikes, and tacks, String-nails, and subclass 13, Nails, spikes, and tacks, Multiple-pronged.

18. **NAILS, SPIKES, AND TACKS, STRING-NAILS.** Wire or similar material swaged or otherwise shaped into a series of nails joined head to point, adapted to be separated and driven by nailing and pegging machines.

Search Class—

85—DRIVEN, HEADED, AND SCREW-THREADED FASTENINGS, subclass 17, Nails, Spikes, and tacks, Tacks, Strips.

19. **NAILS, SPIKES, AND TACKS, LONGITUDINALLY-RIBBED.** Nails and spikes with longitudinally grooved or ribbed shanks to increase their holding power or rigidity.

20. **NAILS, SPIKES, AND TACKS, SPIRAL-SHANK.** Driven fastenings, the shanks of which either have flattened faces and are twisted or have a helical groove or ridge about the same. They are distinguished from drive-screws in that the heads have no slot or other means to permit their rotation and withdrawal.

Search Class—

85—DRIVEN, HEADED, AND SCREW-THREADED FASTENINGS, subclass 44, Screws, Drive.

21. **NAILS, SPIKES, AND TACKS, BARBED AND INDENTED.** Driven fastenings the shanks of which are barbed, serrated, or otherwise indented to prevent easy withdrawal.

Search Class—

85—DRIVEN, HEADED, AND SCREW - THREADED FASTENINGS, subclass 22, Nails, spikes, and tacks, Threaded and indented wire.

22. **NAILS, SPIKES, AND TACKS, THREADED AND INDENTED WIRE.** Wire or other stock threaded, serrated, or otherwise indented or roughened, adapted to be severed as driven.

Search Class—

85—DRIVEN, HEADED, AND SCREW - THREADED FASTENINGS, subclass 21, Nails, spikes, and tacks, Barbed and indented.

23. **NAILS, SPIKES, AND TACKS, LOCKING DEVICES.** Devices attached to or made integral with the nail or spike to prevent or render difficult its withdrawal.

Search Class—

85—DRIVEN, HEADED, AND SCREW - THREADED FASTENINGS, subclasses 7, Bolts, Threadless, Key-lock, and 8, Bolts, Threadless, Key-lock, Bifurcated.

24. **NAILS, SPIKES, AND TACKS, LOCKING DEVICES, RAIL-FLANGE.** Railroad-spikes having lugs or projections which engage the under surface of the rail-flange to prevent withdrawal.

25. **NAILS, SPIKES, AND TACKS, LOCKING DEVICES, RAIL-TREAD.** Railroad-spikes having spurs above the flange-engaging shoulder to engage the under side of the tread of the rail and prevent withdrawal.

CLASS 85—Continued.

26. NAILS, SPIKES, AND TACKS, LOCKING DEVICES, POINT-SPREADERS. Wedges adapted to be placed in the bottom of a previously-bored hole to deflect and clench the points of a bifurcated nail or spike.

Search Class—

85—DRIVEN, HEADED, AND SCREW - THREADED FASTENINGS, subclass 6, Bolts, Threadless, Axial-wedge.

27. NAILS, SPIKES, AND TACKS, LOCKING DEVICES, TRANSVERSE-KEY. Locking devices, usually for railroad-spikes, comprising a single-pointed or bifurcated key which is driven into the tie or the like in a direction substantially transverse to the spike or nail and engaging recesses in the shank thereof.

Search Class—

85—DRIVEN, HEADED, AND SCREW - THREADED FASTENINGS, subclasses 7, Bolts, Threadless, Key-lock, and 8, Bolts, Threadless, Key-lock, Bifurcated.

28. NAILS, SPIKES, AND TACKS, HEADS. Inventions in the head of the nail.

Search Class—

85—DRIVEN, HEADED, AND SCREW - THREADED FASTENINGS, subclass 9, Bolts, Heads.

29. NAILS, SPIKES, AND TACKS, HEADS, PRONGED. Devices, usually railroad-spikes, having heads provided on the under side with additional holding-prongs.

30. NAILS, SPIKES, AND TACKS, POINTS. Inventions in the entering end of the nail or the like.

31. NAILS, SPIKES, AND TACKS, POINTS, DEFLECTING. Points so constructed or beveled as to divert them from a straight line when driven to increase the holding power of the nail or spike.

Search Class—

85—DRIVEN, HEADED, AND SCREW - THREADED FASTENINGS, subclass 13, Nails, spikes, and tacks, Multiple-pronged.

32. NUTS. Securing devices attached to the ends of bolts having an opening either threaded to correspond to the thread of the bolt or some similar cooperating structure to secure the bolt in place in the material to which it is applied.

33. NUTS, ADJUSTABLE-THREAD. Nuts in which the thread is adjustable either radially or axially for various purposes.

Search Class—

90—GEAR-CUTTING, MILLING, AND PLANING, subclass 22, Milling, Work-feeds, Back-lash compensators.

34. NUTS, BLANKS. Forms and structure of blanks for the manufacture of nuts.

35. NUTS, CAPPED. Nuts in which the top is inclosed, usually by a separate ornamental piece, adapting the nut for use on top-prop, vehicle-axes, etc.

36. NUTS, THREADLESS. Devices without an internal thread adapted to secure various forms of threadless bolts.

Search Class—

21—CARRIAGES AND WAGONS, subclass 30, Hub-attaching devices.

- 36.5. NUTS, TURNBUCKLES. The title is self-explanatory.

37. RIVETS. Securing devices of the general form of bolts, but adapted to be permanently secured by upsetting or otherwise distorting a portion of the shank at one or both ends.

38. RIVETS, DIVIDED. Rivets in which the shanks and sometimes a portion of the heads are divided into two or more prongs by longitudinal clefts or notches. The shanks have often an axial recess.

39. RIVETS, DOUBLE-CLENCH. Rivets composed of two parts passed into the material to be secured from opposite sides, each point being clenched within the material or against the head of the opposite part.

40. RIVETS, HOLLOW. Rivets in which the shanks are hollow for part or all of their length.

Search Class—

85—DRIVEN, HEADED, AND SCREW - THREADED FASTENINGS, subclass 38, Rivets, Divided.

41. SCREWS. Fastening devices having shanks provided with threads adapted to produce a corresponding internal thread in the material in which the screw is inserted and with a head having means to engage a rotating device. They are distinguished from Nails, spikes, and tacks, spiral-shank, in that they may be withdrawn by rotation.

CLASS 85—Continued.

Search Class—

85—DRIVEN, HEADED, AND SCREW - THREADED FASTENINGS, subclass 20, Nails, spikes, and tacks, Spiral-shank.

42. SCREWS, DOUBLE-ENDED. Screws having double-pointed shanks, one or both ends being threaded and usually having a boss or the like midway of the article, by which it may be rotated.

Search Class—

85—DRIVEN, HEADED, AND SCREW - THREADED FASTENINGS, subclass 14, Nails, spikes, and tacks, Double-ended.

43. SCREWS, COUNTERSINKING. Screws having heads adapted to cut away the material into which the screw is driven, so that the head may be sunk even with or below the surface.

44. SCREWS, DRIVE. Screws having threads of such pitch or form that the screw may be driven like a nail, but having also means for rotating the screw to withdraw it.

Note.—Search also in this class, subclass 20, Nails, spikes, and tacks, Spiral-shank.

45. SCREWS, DRIVING CONTACTS. Means such as nicks angular heads, or projecting ribs adapted to be engaged by a correspondingly-shaped driver to rotate the screw.

46. SCREWS, THREADS. Invention residing in a variation of form or location of the thread.

Search Class—

85—DRIVEN, HEADED, AND SCREW - THREADED FASTENINGS, subclass 1, Bolts.

47. SCREWS, THREADS, INTERRUPTED. Threads whose continuity is broken by longitudinal slots of varying section.

48. SCREWS, THREADS, ROLLED. Threads produced by displacing the metal laterally by dies instead of removing it by a cutting-tool.

49. STAPLES. Double-pointed fastenings, substantially U-shaped and usually having legs of equal length, which are designed to span and hold in place a separate piece or article, the legs piercing the material on opposite sides of the article held.

Search Classes—

85—DRIVEN, HEADED, AND SCREW - THREADED FASTENINGS, subclass 13, Nails, spikes, and tacks, Multiple-pronged.

217—WOODEN RECEPTACLES, subclass 71, Boxes, Stays, Driving, Wire.

50. WASHERS. Annular devices not strictly fastenings, but grouped therewith because of their associated use and adapted to be placed beneath bolt-heads, nuts, and the like for additional security, to reduce friction, for ornament, etc.

Search Class—

121—STEAM ENGINES, PACKING.

51. WASHERS, REMOVABLE. Sectional washers so constructed as to be removed laterally from beneath the securing-head.

52. WASHERS, ORNAMENTAL. Perforated ornamental devices placed beneath nail, bolt, and screw heads, but not permanently concealing such heads, some having swinging caps which may be thrown over the head of the fastening.

Search Class—

85—DRIVEN, HEADED, AND SCREW - THREADED FASTENINGS, subclass 53, Ornamental heads, and subclasses thereunder.

53. ORNAMENTAL HEADS. Picture nails, screws, etc., provided with ornamental heads, frequently attached after the fastening is driven, and completely covering the protruding end of the screw or nail, by which construction they are distinguished from ornamental washers.

Search Class—

85—DRIVEN, HEADED, AND SCREW - THREADED FASTENINGS, subclass 52, Washers, Ornamental.

54. ORNAMENTAL HEADS, MOLDED. Heads composed of plastic material compressed by dies upon the shank or integral head of the fastener.

55. ORNAMENTAL HEADS, CLIP-ATTACHED. Fasteners adapted to be driven and have the ornamental head subsequently attached by sliding the fastening-shank either transversely or axially beneath clips provided on the under side of the head.

56. ORNAMENTAL HEADS, SCREW-ATTACHED. Ornamental heads secured to the screw-threaded tip of the shank after the manner of a nut or by means of a small auxiliary screw.

CLASS 86.—ARMS, PROJECTILES, AND EXPLOSIVE CHARGES. MAKING.

DEFINITIONS.

Class.

This class contains *special* machines, devices, and processes for manufacturing firearms, ordnance, projectiles, cartridges and caps (either loaded or empty), pyrotechnic devices, blasting charges, etc. All such *single* operations as rolling, turning, milling, boring, forging, paper-strip winding, and the like as may be necessary in the production of articles of this class will be found classified in the corresponding functional classes.

Search Classes—

18—PLASTICS, for inventions in molding explosive compositions and substances; **22, METAL-FOUNDING**, for casting projectiles; **52, EXPLOSIVES**, for explosive compositions; **75, METALLURGY**, subclass 197, Miscellaneous; and **83, MILLS**, subclass 91, Liquid comminuting and solidifying, for shot towers.

Subclasses.

1. **MISCELLANEOUS**. Machines and devices not otherwise classifiable for making the articles named in the class title.
2. **ORDNANCE**. Machines and processes for manufacturing cannon and similar heavy guns.
3. **ORDNANCE, PROCESSES**. Methods of casting, forging, shrinking reinforces, and otherwise constructing solid or built-up ordnance.
Note.—If the method of manufacture be apparent from an inspection of the piece itself, such processes are classified with the articles.
4. **GUN-BARRELS**. Special machines, devices, and methods for manufacturing the barrels of firearms.
5. **RIFLING**. Machines and devices for cutting spiral grooves in the interior of the barrels of firearms and ordnance.
6. **AMMUNITION-MAKING, SHELLS**. Machines, methods, etc., for making and banding projectiles for heavy ordnance.
7. **AMMUNITION-MAKING, BULLETS AND SHOT**. Special machines and methods for making bullets and shot from *solid metal* by cutting, rolling, shaking, etc.; usually by combinations of these operations.

Search Classes—

22—METAL-FOUNDING; **75, METALLURGY**, subclass 197, Miscellaneous, for making bullets and shot from molten metal; **83, MILLS**, subclass 91, Liquid comminuting and solidifying.

8. **AMMUNITION-MAKING, BULLETS AND SHOT, BULLET-SWAGING**. Special machines for producing bullets by rolling, die-shaping, etc.

Search Classes—

18—METAL FORGING AND WELDING.
80—METAL-ROLLING.

9. **AMMUNITION-MAKING, BULLETS AND SHOT, PROCESSES**. Methods peculiar to the manufacture of bullets and shot from solid metal.
10. **AMMUNITION-MAKING, CAPS AND CARTRIDGES**. Miscellaneous machines and devices for making percussion caps and cartridges for firearms.
11. **AMMUNITION-MAKING, CAPS AND CARTRIDGES, PAPER SHELLS**. Miscellaneous machines for making metal-headed paper shells for shot-cartridges.
12. **AMMUNITION-MAKING, CAPS AND CARTRIDGES, PAPER SHELLS, ASSEMBLING**. Machines for setting reinforces, wads, heads, caps, or for otherwise assembling the parts of paper cartridge-shells.
13. **ABOLISHED.**
14. **AMMUNITION-MAKING, CAPS AND CARTRIDGES, SHELL-HEADING**. Machines for flattening, flanging, and indenting the closed ends of metal tubes to adapt them for use as rim or center fire cartridges.
15. **AMMUNITION-MAKING, CAPS AND CARTRIDGES, SHELL TAPERING AND NECKING**. Machines for either uniformly tapering the shell of a cartridge or for constricting it sharply near its open end to adapt it to a bullet smaller than the caliber of the powder-chamber.
16. **AMMUNITION-MAKING, CAPS AND CARTRIDGES, SHELL-TRIMMING**. Machines for trimming the heads, flanges, primer-holes, and mouths of cartridge-shells.
17. **AMMUNITION-MAKING, CAPS AND CARTRIDGES, SHELL LINING AND VARNISHING**. Machines for varnishing the interior of cap and cartridge shells or for covering the fulminate or shell interior with metal foil.

CLASS 86—Continued.

18. **AMMUNITION-MAKING, CAPS AND CARTRIDGES, PROCESSES**. Methods or sets of steps employed in producing cartridge-shells, etc.
19. **AMMUNITION-MAKING, LUBRICATING**. Machines and devices for lubricating bullets, wads, and cartridges. A few machines cut as well as lubricate the wads.
20. **LOADING FIREWORKS AND BLASTING CHARGES**. Machines, etc., for filling and ramming fireworks and for filling, tamping, and priming charges to be fired as blasts.
Search Class—
86—ARMS, PROJECTILES, AND EXPLOSIVE CHARGES, MAKING, appropriate subclasses under subclass 23, Ammunition-loading.
21. **LOADING FIREWORKS AND BLASTING CHARGES, IMPLEMENTS**. Devices for filling and tamping blast-holes.
22. **LOADING FIREWORKS AND BLASTING CHARGES, IMPLEMENTS, FUSE**. Tools for cutting, capping, and setting fuses in blasting charges.
Search Class—
7—COMPOUND TOOLS, subclass 10, Type, Miner's candlestick.
23. **AMMUNITION-LOADING**. Machines and devices not otherwise classifiable for loading or reloading fixed ammunition for small-arms and ordnance.
24. **AMMUNITION-LOADING, IMPLEMENTS**. Hand supported and operated devices not otherwise classifiable for performing the various operations of loading and reloading cartridges. A few perform various other functions, such as molding and sizing bullets, sizing and trimming shells, extracting cartridges from barrels of firearms, etc.
Note.—All devices having a fixed base or means for clamping to a fixed support are considered machines throughout this class and are correspondingly classified.
25. **AMMUNITION-LOADING, LOADING AND SHELL CLOSING**. Machines and devices for filling, wadding, and ramming the charge and then contracting the mouth of the shell either above the outer wad or upon the periphery of the bullet. All the operations of loading are performed except capping and uncapping and in many cases these also.
26. **AMMUNITION-LOADING, LOADING AND SHELL CLOSING, RECTILINEAR SHELL-FEED**. Machines for loading or reloading and crimping cartridges in which the shells are fed through the machine in a straight line by means of guides, independent holders, or endless linked tables.
27. **AMMUNITION-LOADING, LOADING AND SHELL CLOSING, ROTARY SHELL-FEED**. Machines for loading and crimping, cartridges in which the shells are carried to the various loading devices by a rotary table having a step-by-step movement. Many automatic machines are included which perform all the loading steps except capping the shells.
28. **AMMUNITION-LOADING, LOADING AND SHELL CLOSING, IMPLEMENTS**. Hand supported and operated devices for loading and closing cartridge-shells either by crimping the cartridge upon the outer wad or swaging it upon the bullet. Some of these implements lack means for capping and uncapping the shells or for measuring and inserting the contents.
29. **AMMUNITION-LOADING, FILLING AND RAMMING**. Machines and devices for placing the powder and shot in cartridges and setting the wads in the same.
Search Class—
86—ARMS, PROJECTILES, AND EXPLOSIVE CHARGES, MAKING, subclasses 20, Loading fireworks and blasting charges; 25, Loading and shell-closing; 26, Loading and shell-closing, Rectilinear shell-feed; and 27, Loading and shell-closing, Rotary shell-feed, under Ammunition-loading.
30. **AMMUNITION-LOADING, FILLING AND RAMMING, RAMMERS**. Machines and devices for compacting the charges in cartridges or setting wads in the same. The machines usually have means for applying the same pressure to each of a number of ramming pistons.
31. **AMMUNITION-LOADING, FILLING**. Instruments for measuring powder and shot charges and conveying the same into the shells to be loaded.
Search Class—
86—ARMS, PROJECTILES, AND EXPLOSIVE CHARGES, MAKING, subclasses 25, Loading and shell-closing; 26, Loading and shell-closing, Rectilinear shell-feed; 27, Loading and shell-closing, Rotary shell feed, and 29, Filling and ramming, all under Ammunition-loading.
32. **AMMUNITION-LOADING, FILLING, CAP AND CARTRIDGE PRIMING**. Machines for supplying cap and cartridge shells with fulminate. In many cases the explosive is spread or packed in the shell by rapidly rotating the latter.

CLASS 86—Continued.

33. **AMMUNITION - LOADING, FILLING, IMPLEMENTS.** Hand-supported devices for measuring charges and placing the same in shells.
34. **ABOLISHED.**
35. **ABOLISHED.**
36. **AMMUNITION-LOADING, CAPPING AND UNCAPPING.** Instruments for removing exploded primers from used cartridges or for setting fresh primers, or both.
37. **AMMUNITION-LOADING, CAPPING AND UNCAPPING IMPLEMENTS.** Hand supported and operated devices for removing exploded primers or for setting fresh ones, or both.
- Search Classes—**
 29—METAL-WORKING, subclass 86.1, Assembling, Pin inserters and removers.
 218—BUTTON, EYELET, AND RIVET SETTING, subclasses 19 to 27, Implements.
38. **AMMUNITION-LOADING, CAPPING AND UNCAPPING, IMPLEMENTS, MAGAZINE.** Hand-operated capping and uncapping devices having a receptacle for holding and presenting a fresh primer to the capping means.
- Search Class—**
 218—BUTTON, EYELET, AND RIVET SETTING, subclasses 19 to 27, Implements.
39. **AMMUNITION-LOADING, CRIMPING.** Instruments for closing paper shells upon the outer wad or for swaging a metal shell upon the bullet. The wad may be held by turning in the mouth of the shell, by creasing it in longitudinal folds, or by indenting or perforating the shell just above the wad.
- Search Class—**
 86—ARMS, PROJECTILES, AND EXPLOSIVE CHARGES, MAKING, subclasses 23, Ammunition-loading, and under that 25, Loading and shell-closing; 26, Loading and shell-closing, Rectilinear shell-feed; and 27, Loading and shell-closing, Rotary shell-feed.

CLASS 86—Continued.

40. **AMMUNITION-LOADING, CRIMPING, IMPLEMENTS.** Hand supported and operated devices for closing shells to secure the outer wad or the bullet in place.
- Search Class—**
 86—ARMS, PROJECTILES, AND EXPLOSIVE CHARGES, MAKING, subclasses 24, Ammunition-loading, Implements, and 28, Loading and shell-closing, Implements.
41. **AMMUNITION - LOADING, CRIMPING, CRIMPER-HEADS.** Those elements of crimping-machines which directly effect the closing of the cartridge.
- Search Class—**
 86—ARMS, PROJECTILES, AND EXPLOSIVE CHARGES, MAKING, subclasses 24, Ammunition-loading, Implements; 25, Loading and shell-closing; 26, Loading and shell-closing, Rectilinear shell-feed; 27, Loading and shell-closing, Rotary shell-feed; 39, Crimping; and 40, Crimping, implements.
42. **AMMUNITION - LOADING, BULLET - PATCHING.** Instruments for cutting and attaching cloth patches to bullets.
43. **AMMUNITION - LOADING, BULLET - SETTING.** Instruments for pressing bullets into cartridge-shells.
44. **AMMUNITION-LOADING, SHELL-HOLDERS.** Devices for holding shells in convenient position for loading.
- Search Class—**
 86—ARMS, PROJECTILES, AND EXPLOSIVE CHARGES, MAKING, subclass 31, Ammunition-loading, Filling.
45. **FEEDING DEVICES.** Instruments for conveying bullets, shells, wads, etc., to the working parts of ammunition-making and loading machines.
- Search Class—**
 10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 162, Distributors and feeders, and subclasses thereunder.
46. **FEEDING DEVICES, SHELL.** Instruments for feeding empty shells to ammunition-making and loading machines.
47. **CARTRIDGE-PACKING.** Instruments for packaging cartridges for shipping.

CLASS 88.—OPTICS.

DEFINITIONS.

Class.

This class includes all instruments (and their accessories) for aiding or testing vision and for projecting images upon surfaces external to the instruments; also, astronomical and surveying instruments in which vision is employed for accurate alinement and other devices or methods involving reflection, refraction, or chromatic effects which are not so closely related to other arts that they should be classified elsewhere.

Subclasses.

1. MISCELLANEOUS. Optical devices not covered by the more specific subclass titles.
2. ASTRONOMICAL AND SURVEYING INSTRUMENTS. Instruments and parts of instruments for making the observations of astronomy, navigation, or surveying.
3. ASTRONOMICAL AND SURVEYING INSTRUMENTS, DISTANCE. Instruments specially designed for determining the distance of remote objects without actually traversing the intervening space. In some instruments the distance is determined directly and in others calculations must be made from the data obtained by observations with the instrument.
4. ASTRONOMICAL AND SURVEYING INSTRUMENTS, DISTANCE, ELECTRIC. All distance instruments in which the readings are obtained from variations in the strength of an electric current.
5. ASTRONOMICAL AND SURVEYING INSTRUMENTS, DISTANCE, REMOTE-BASE. Instruments for determining distances from calculations based on a known dimension at the point whose distance is to be determined.
6. ASTRONOMICAL AND SURVEYING INSTRUMENTS, DISTANCE, DOUBLE-OBSERVATION. Distance instruments having sighting devices at either end of a member of known length which forms the base of the triangle of calculation.
7. ASTRONOMICAL AND SURVEYING INSTRUMENTS, DISTANCE, DOUBLE-OBSERVATION, EXTERNAL-BASE. Instruments designed for determining distances by making two observations of the distant point from the ends of a line of known length external to the instrument, this line forming the base of the triangle of calculation.
8. ASTRONOMICAL AND SURVEYING INSTRUMENTS, SOLAR. Instruments constructed especially for observations of the sun and used chiefly in the determination of the true meridian.
9. ASTRONOMICAL AND SURVEYING INSTRUMENTS, ALTITUDE. Instruments designed merely for the determination of angular magnitudes in vertical planes.
10. ASTRONOMICAL AND SURVEYING INSTRUMENTS, ALTITUDE, SEXTANTS. Instruments for determining altitudes by simultaneously observing the point of reference (usually the horizon) by direct vision and the point of unknown altitude by reflection.
11. ASTRONOMICAL AND SURVEYING INSTRUMENTS, ALTITUDE, ARTIFICIAL HORIZONS. Artificial means for indicating the horizontal plane when the horizon is obscured.
12. ASTRONOMICAL AND SURVEYING INSTRUMENTS, LEVELING. Instruments for determining by suitable leveling means and sighting devices true horizontal lines that are entirely independent of the surface on which the instrument stands.
Note.—All instruments for testing the level or inclination of the surface on which the instrument rests are classified in class 73, MEASURING INSTRUMENTS, under the titles Plumb levels; Levels, Spirit, and Levels, Spirit, Clinometers.
13. ASTRONOMICAL AND SURVEYING INSTRUMENTS, LEVELING, GRADIENT. Leveling instruments provided with means for determining grades—i. e., straight lines departing slightly from the horizontal.
14. TESTING INSTRUMENTS. Testing instruments for various purposes, but all involving optical principles, such as reflection, refraction, or the comparison of colors and not requiring any chemical changes in the substances tested.
Note.—Apparatus for testing eggs, being distinct in character and having been long identified with the preserving art, is left in class 99, PRESERVING.
15. KALEIDOSCOPES. Instruments provided with mirrors so placed as to cause objects viewed through the instruments to appear multiplied in symmetrical patterns.

CLASS 88.—Continued.

16. MOTION PICTURE APPARATUS. Instruments for successively displaying pictures or for projecting images of objects in successively different positions with such rapidity that owing to the persistence of visual impressions upon the retina the illusion of the pictured objects in motion is produced, also cameras peculiarly adapted for producing "motion pictures."

Search Classes—

- 88—OPTICS, subclasses 28, Projecting apparatus, Magic lanterns, View changing devices, and 31, Stereoscopes, View changing.
- 40—CARD, PICTURE AND SIGN EXHIBITING, subclass 28, Changeable exhibitors, and subclasses thereunder.

17. MOTION PICTURE APPARATUS, PICTURE-STRIP. Motion picture apparatus wherein the picture vehicle consists of a strip or sheet bearing the successive pictures adapted to be moved past a light-orifice of the apparatus.

18. MOTION PICTURE APPARATUS, PICTURE-STRIP, INTERMITTENT-FEED. Picture-strip apparatus having means to feed the strip rapidly step by step.

19. MOTION PICTURE APPARATUS, PICTURE-LEAF. Motion picture apparatus wherein the picture vehicle consists of a series of leaves or plates, the pictures being successively exposed to view by the rapid successive turning of the leaves.

- 19.5. MOTION PICTURE APPARATUS, PICTURE VEHICLES AND ELEMENTS. The structure of the picture-bearing elements of motion picture apparatus, arrangements of pictures thereon, and such other picture elements as are peculiar to motion picture machines.

Search Classes—

- 41—ORNAMENTATION, subclass 17, Surface type, and appropriate subclasses thereunder, for pictures and processes of making them of general application.
- 95—PHOTOGRAPHY, appropriate subclasses, for photographic methods for producing negative or positive pictures and for photographic surfaces.

20. OPTOMETERS. All instruments for examining the eye, whether for the purpose of determining the nature and degree of visual defects or for the purpose of fitting glasses.

21. OPTOMETERS, FACE-GAGES. Instruments for making such facial measurements as are necessary to make glasses fit the face of the wearer. The subclass does not include any devices for use in selecting lenses to suit the eyes.

22. OPTOMETERS, MULTIPLE-LENS. Optometers provided with a carrier for a plurality of lenses which may be successively brought before the eyes for testing them.

23. PHOTOMETERS. All forms of apparatus for measuring the intensity of light.

Note.—Means adapted to measure actinic intensity are classified in class 95, PHOTOGRAPHY, subclass 10, Actinometers.

24. PROJECTING APPARATUS. Instruments not otherwise classifiable peculiarly adapted to project real images.

Search Classes—

- 88—OPTICS, subclass 16, Motion picture apparatus, and subclasses thereunder.

- 95—PHOTOGRAPHY, subclass 11, Cameras, and appropriate subclasses thereunder, for means for projecting images onto light sensitive surfaces.

25. PROJECTING APPARATUS, HELIOSTATS. Projecting apparatus using solar light and comprising, essentially, a reflector and mechanism for causing it to follow the apparent movements of the sun, so as to keep the direction of the reflected light constant.

26. PROJECTING APPARATUS, MAGIC LANTERNS. Projecting apparatus using artificial light, except mere assemblages of instruments of common type, the novelty of which lies in the way in which the instruments are combined.

27. PROJECTING APPARATUS, MAGIC LANTERNS, ROTARY SLIDE-CARRIERS. Magic lanterns provided with a rotary disk or hollow cylinder carrying a number of designs which are successively brought into position for projection. The instruments are usually automatic and used chiefly for advertising.

28. PROJECTING APPARATUS, MAGIC LANTERNS, VIEW-CHANGING DEVICES. Devices for facilitating the operation of changing slides in a magic lantern, most of them being designed to produce dissolving effects.

29. STEREOSCOPES. Picture-viewing apparatus designed to produce relief effects.

Note.—Compare class 40, CARD, PICTURE, AND SIGN EXHIBITING.

30. STEREOSCOPES, ALBUM. Stereoscopes consisting of viewing-lenses in combination with a book of views.

Note.—Compare class 40, CARD, PICTURE, AND SIGN EXHIBITING.

CLASS 88—Continued.

31. **STEREOSCOPES, VIEW-CHANGING.** Stereoscopes having devices for holding a number of views and bringing them successively into position for viewing.

Search Class—

40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 23, Changeable exhibitors, and the subclasses thereunder.

32. **TELESCOPES.** Instruments for viewing objects at a distance too great for clear vision with the naked eye.

Note.—Does not include the so-called submarine telescopes, fog-penetrating glasses, and instruments for looking over obstacles. These may be found in subclass 1, Miscellaneous.

33. **TELESCOPES, PRISMATIC.** Telescopes in which totally-reflecting prisms are employed to give a long focus without using long barrels for holding the lenses.

34. **TELESCOPES, FIELD AND OPERA GLASSES.** Binocular telescopes of the kind commonly used in field work and in theaters.

35. **TELESCOPES, FIELD AND OPERA GLASSES, FOLDING AND COLLAPSIBLE.** Field and opera glasses in which the lenses are mounted in frames which fold upon one another or which are so supported that the whole structure will collapse and occupy very small space.

36. **TELESCOPES, FIELD AND OPERA GLASSES, SUPPORTS.** Supports of various kinds for field and opera glasses, chiefly handles for supporting the glasses before the eyes while the glasses are in use.

37. **TELESCOPES, FIELD AND OPERA GLASSES, SUPPORTS, FOCUSING.** Supports provided with means for approximating and separating the lenses in focusing.

38. **TELESCOPES, REFLECTING ATTACHMENTS.** Mirror attachments for telescopes to permit the users to observe objects without appearing to be looking toward them.

39. **MICROSCOPES.** All instruments for the visual examination of objects too small to be clearly seen with the unaided eye, including mere hand-lenses used for reading.

Search Class—

88—OPTICS, subclass 41, Eye glasses and spectacles, for small microscopes used by jewelers, engravers, etc., and worn as eyeglasses.

40. **MICROSCOPES, ACCESSORIES.** Various implements and articles used only in connection with microscopes, including slides, microtomes, forceps, etc.

41. **EYEGLASSES AND SPECTACLES.** Instruments for aiding vision, consisting of a lens, usually simple, for each eye or for one eye only and means for supporting the lenses before the user's eyes.

42. **EYEGLASSES AND SPECTACLES, CONNECTIONS.** Devices for connecting the bridge and lens-supports of eyeglasses and in many cases securing the nose-grips also.

Note.—Means for attaching the nose-grips only are classified with the grips in subclass 48, Eyeglasses and spectacles, Nose-grips.

43. **EYEGLASSES AND SPECTACLES, BRIDGES.** Bars, springs, or combinations thereof extending across the nose and connecting the lens-supports of eyeglasses or spectacles.

44. **EYEGLASSES AND SPECTACLES, BRIDGES, FOLDING.** Bridges for eyeglasses and spectacles having a joint permitting the folding of one lens on the other.

45. **EYEGLASSES AND SPECTACLES, BRIDGES, SPRING.** Bridges consisting wholly or in part of springs to exert pressure upon the nose of the wearer.

46. **EYEGLASSES AND SPECTACLES, BRIDGES, SPRING, BAR.** Spring bridges having a straight bar which serves as a guide for the movement of the lenses.

47. **EYEGLASSES AND SPECTACLES, LENS-MOUNTS.** Frames and gripping devices for the lenses of eyeglasses and spectacles.

48. **EYEGLASSES AND SPECTACLES, NOSE-GRIPS.** Devices for gripping the nose in order to hold the eyeglasses or spectacles in position including the means for attaching such grips to the rest of the eyeglass structure.

Note.—When such attaching means serves to connect the bridge and lens-supports it is classified in subclass 42, Eyeglasses and spectacles, Connectors.

CLASS 88—Continued.

49. **EYEGLASSES AND SPECTACLES, NOSE-GRIPS, ADJUSTABLE.** All nose-grips susceptible of adjustment to fit noses of different shapes and sizes.

50. **EYEGLASSES AND SPECTACLES, NOSE-GRIPS, ADJUSTABLE, AUTOMATIC.** All nose-grips adapted to conform automatically to the size and shape of the wearer's nose.

51. **EYEGLASSES AND SPECTACLES, SUPPORTS.** Devices other than the usual nose-grips, bridges, and temples for supporting eyeglasses or spectacles before the eyes of the user.

52. **EYEGLASSES AND SPECTACLES, TEMPLES.** Supporting devices for spectacles consisting of members secured to the outer ends of the lenses or their frames and bearing upon the sides of the user's head.

53. **EYEGLASSES AND SPECTACLES, TEMPLES, CONNECTIONS.** Means for connecting the temples of spectacles with the lenses or their frames.

54. **EYEGLASSES AND SPECTACLES, LENSES.** Lenses specially adapted for use in spectacles or eyeglasses.

55. **EYEGLASSES AND SPECTACLES, NOSE-GUARDS.** Devices removably secured to the bridges of eyeglasses and spectacles to prevent injury to the nose of the wearer.

56. **LENS-TESTERS.** Instruments for determining the foci, centers, optical axes, or other optical characteristics of lenses.

57. **LENSES.** All lenses and their mounts not otherwise provided for.

Search Classes—

88—OPTICS, subclass 54, Eyeglasses and spectacles, Lenses.

240—ILLUMINATING BURNERS, subclass 106, Refractors.

- 57.5. **BUILDING LIGHTS.** Miscellaneous reflecting and refracting appliances specially adapted to be used to distribute light in rooms and buildings.

Search Class—

240—ILLUMINATION, for reflectors and refractors specially adapted for use with artificial light sources.

58. **BUILDING-LIGHTS, CANOPY.** Lighting devices for the interior of buildings consisting of a supporting-frame attached to the wall or roof of the building and having some means for throwing light into the building by refraction, reflection, or both.

Search Class—

88—OPTICS, subclass 25, Projecting apparatus, Heliostats, for reflectors provided with mechanism for causing the reflector to follow the apparent movement of the sun.

59. **BUILDING-LIGHTS, VAULTS.** Masses of glass or other transparent material of suitable shape for diffusing light in certain desired directions and designed for use in vault-covers and the like.

60. **BUILDING-LIGHTS, WINDOW.** Window-panes of glass or similar material having surfaces designed to transmit and diffuse light in certain desired directions.

61. **TRIPODS.** Supports, usually three-legged, for surveyors' instruments, photographic cameras, and other optical instruments.

Note.—Supports in general are in class 248, SUPPORTS.

Search Class—

95—PHOTOGRAPHY, subclass 86, Camera-supports, for supports peculiarly adapted for use with cameras.

62. **TRIPODS, CANE TYPE.** Tripods which when folded resemble an ordinary walking-cane.

63. **TRIPODS, HORIZONTAL ADJUSTMENTS.** Devices for shifting the tripod-head horizontally without disturbing the feet.

64. **TRIPODS, INSTRUMENT-ATTACHING DEVICES.** Various means for securing the instrument to the tripod.

65. **TRIPODS, LEVELING ADJUSTMENTS.** Adjusting means for bringing the instrument to a level without disturbing the tripod.

66. **RODS AND TARGETS.** Graduated rods for use in leveling and other surveying operations, together with targets for use in connection therewith.

67. **WINDOW-REFLECTORS.** Reflectors designed to be supported adjacent to windows and in analogous situations to enable persons to observe objects which could not be seen by them without changing position.

CLASS 89.—ORDNANCE.

DEFINITIONS.

Class.

This class includes all guns adapted to be mounted or supported otherwise than by hand, also the mounts, supports, or carriages, loading and hoisting mechanism, shields and sights.

Subclasses.

1. MISCELLANEOUS. Ordnance not otherwise classifiable.
2. AUTOMATIC, GAS-OPERATED. Those guns which utilize the expansive force of the gases of explosion to automatically perform the entire cycle of operations comprising opening the breech, ejecting the shell, feeding in a new charge, and closing the breech. Usually by holding the safety-sear the charge is fired and the loading and firing continue until the sear is released or the ammunition no longer supplied.
Search Class—
42—FIRE-ARMS, subclass 3, Breech loading, Automatic, Gas operated.
3. AUTOMATIC, RECOIL-OPERATED. Guns in which the recoil of the gun opens the breech, ejects the shell, inserts a new charge, and closes the breech. Usually a safety-sear is provided which, if held, permits the charge to be fired and the cycle of operations to be repeated so long as ammunition is supplied.
Search Class—
42—FIRE-ARMS, subclass 4, Breech loading, Automatic, Recoil operated.
4. SEMI-AUTOMATIC. Guns which utilize the force of the explosion to open the breech and eject the cartridge-shell if present. A new charge inserted by hand or other separate means usually releases the breech-block, which then automatically closes. Some breech-blocks are, however, closed by hand.
5. SUBMARINE. Guns adapted to be employed under water, usually for discharging torpedoes.
6. PNEUMATIC. Guns adapted to the use of compressed air or mixtures of air and other gases as the propelling agent.
7. PNEUMATIC, EXPLOSIVE-CHARGE. Guns in which the compression of the propelling-gas is secured by exploding a separate charge or in which the mixture is itself exploded.
8. ACCELERATING. Guns in which several charges are successively exploded to produce an accelerating effect upon the projectile.
9. MACHINE-GUNS. Guns in which mechanical means are employed to load, fire, and reload the gun or in which a holder containing a series of charges is mechanically shifted or fed to bring the charges successively to firing position.
10. MACHINE-GUNS, CENTRIFUGAL. Machine guns which have no explosive charge, but depend upon centrifugal force to throw the projectile.
11. MACHINE-GUNS, AXIALLY-MOVING BREECH-BLOCK. Machine guns in which the movement of the breech-block in opening and closing the breech is in line with the axis or bore of the gun.
12. MACHINE-GUNS, REVOLVING-BARREL. Machine guns in which the barrels revolve during the loading operations. The Gatling and Hotchkiss type are here included.
13. MACHINE-GUNS, REVOLVING-CYLINDER. Machine guns in which, like the common revolver, the cylinder containing the charges revolves to bring a new load or set of loads to firing position.
14. BARRELS. Structure of the barrel or body of the gun or the shape or arrangement of the bore or firing-chamber.
15. BARRELS, WOUND. Gun barrels strengthened by windings of wire, metal ribbon, rawhide, etc.
16. BARRELS, COMPOSITE. Gun barrels built up or formed of more than one piece.
17. BREECH-CLOSURES. The breech-block, its operating mechanism, or the means for securing the block to the breech.
18. BREECH-CLOSURES, KEY-LOCKED. Breech-closures in which a locking-key is used to hold the block in the breech. The key may be radially thrown out, inserted behind the block, or otherwise employed.
19. BREECH-CLOSURES, SCREW. Breech-blocks adapted to be screwed into the breech.
20. BREECH - CLOSURES, SCREW, INTERRUPTED. Breech-blocks held in the breech by divided or interrupted screw-threads.
21. BREECH - CLOSURES, SCREW, INTERRUPTED, FIXED AMMUNITION. Closures of the divided-screw-thread type adapted to fire charges inclosed in a rigid case.

CLASS 89—Continued.

22. BREECH-CLOSURES, TRANSVERSE. Breech-closures in which the block in opening or closing the breech moves transversely to the axis of the bore.
23. BREECH-CLOSURES, TRANSVERSE, SLIDING AND SWINGING. Breech-closures in which the breech-block has both a transverse sliding and then a swinging movement.
24. BREECH - CLOSURES, TRANSVERSE, SLIDING. Breech-closures in which the breech-block slides laterally to open the breech.
25. BREECH-CLOSURES, TRANSVERSE, SWINGING. Breech-closures in which a block is pivoted and has no movement except to swing transversely to the axis of the bore to open or close the breech.
26. BREECH-CLOSURES, GAS-CHECKS. Breech-closures in which the novelty resides in the means for checking the gases from escaping at the breech in those guns which fire loose charges.
27. FIRING DEVICES. The lock or charge-exploding mechanism.
Search Class—
89—ORDNANCE, subclasses 2, Automatic, Gas-operated, 3, Automatic, Recoil-operated; all those under 9, Machine-guns; 20, Breech-closures, Screw, Interrupted; 21, Breech-closures, Screw, Interrupted, Fixed-ammunition; and 24, Breech-closures, Transverse, Sliding.
28. FIRING DEVICES, ELECTRIC. Apparatus for firing charges by electricity.
29. PRACTICE-BARRELS. Small barrels adapted to be inserted in the bore of larger guns in order to permit firing a small load for practice or any other purpose.
30. VENTS AND STOPPERS. Inventions relative to the vent or touch-hole or its stopper.
31. TOMPIONS AND VALVES. Devices for closing the gun-muzzle or other opening in the barrel.
32. SIGHTS. Inventions in the mounting or arrangement of the sight or the traverse-indicators.
Search Class—
42—FIRE-ARMS, subclass 80, Sights, and subclasses thereunder.
33. CARTRIDGE-FEEDING. Devices adapted to feed the cartridges to the gun.
34. CARTRIDGE - FEEDING, HOLDERS. Magazines, feed-cases, packages, etc., in which cartridges are regularly placed to be fed therefrom to the feeding-chute or other mechanism which directly supplies the gun.
35. CARTRIDGE-FEEDING, BELTS. Inventions in the feed-belt to which the cartridges are attached.
Search Class—
224—PACKAGE AND ARTICLE CARRIERS, subclass 13, Body and belt Attached, Cartridge, and subclasses thereunder.
36. SHIELDS. Gun-shields, body-attached shields, bullet-proof cloth, etc.
37. MOUNTS. Gun-supporting devices not otherwise classifiable.
38. MOUNTS, DISAPPEARING GUN. Mounts for guns made to disappear after firing to be reloaded.
39. MOUNTS, DISAPPEARING GUN, COUNTERPOISE. Mounts which are balanced by a weight or weights.
40. MOUNTS, FIELD. Wheeled mounts, tripods, etc., adapted to be readily moved, as in field-service.
41. MOUNTS, TRAINING MECHANISM. Mounts for positively moving the gun in pointing it.
42. MOUNTS, RECOIL-CHECKS. Mounts in which the novelty resides in the devices for taking up the force of the recoil.
Search Class—
89—ORDNANCE, subclasses 3, Automatic, Recoil-operated, and 4, Semi-automatic.
43. MOUNTS, RECOIL-CHECKS, FLUID. Means for checking the recoil by compression of air, water, or other liquid or gaseous material.
44. MOUNTS, RECOIL-CHECKS, SPRING. Recoil checks wherein the recoil is taken up by the compression of a spring or springs.
45. LOADING. Devices for getting the load into firing position in the gun not otherwise classifiable.
46. LOADING, HOISTING APPARATUS. Apparatus for raising the load to the muzzle or breech of the gun.
47. LOADING, RAMMERS. Devices for ramming or pushing the load into the gun.

CLASS 90.—GEAR-CUTTING, MILLING, AND PLANING.**DEFINITIONS.***Class.*

This class covers the three allied operations named, since gears are produced by either rotating milling-machines or by reciprocating cutters similar to those used in planing-machines, and for the further reason that the work-indexing, work-supporting, and work-feeding devices employed in all three operations are structurally indistinguishable.

Subclasses.

1. **GEAR-CUTTING.** Miscellaneous instruments for cutting gear-teeth on cylindrical, conical, or hemispherical blanks or for cutting separate cogs or teeth for subsequent insertion in such blanks.
2. **GEAR-CUTTING, INTERMESHING-GENERATOR.** Machines in which the working faces of the teeth of the blank are "generated" by cutters which intermesh with the blank after the manner of a mating gear. Though the generating-cutter usually revolves, its cutting action is a planing or broaching rather than a milling action.
3. **GEAR-CUTTING, ROTATING-CUTTER.** Machines for producing gears, usually spur-gears, by means of rotating cutters which have the same section as the space between two teeth of the blank, there being also means for effecting a relative feeding movement between cutter and blank.
4. **GEAR-CUTTING, ROTATING-CUTTER, HELICAL GEARS.** Machines of the rotating-cutter type for producing worm-gearing or spiral gears.
5. **GEAR-CUTTING, ROTATING-CUTTER, BEVEL-GEARS.** Machines of the rotating-cutter type especially designed to produce bevel-gears.
6. **GEAR-CUTTING, ROTATING-CUTTER, BLANK-PILLAR AND CUTTER-SLIDE.** A type of rotating-cutter or "gear-milling" machines in which the blank-mandrel is adjustably supported upon an upright pillar, while the cutter is carried upon a slide traversing ways on the frame of the machine.
7. **GEAR-CUTTING, ROTATING-CUTTER, AXIALLY-TRAVELING.** Machines in which a gang of rotating cutters mounted on the same driving-mandrel have in addition to their rotary motion a rectilinear motion in a direction tangent to the synchronously rotated blank, thus generating the tooth curve.
8. **GEAR-CUTTING, RECIPROCATING-CUTTER.** Machines in which the tooth outline is produced by a cutter which reciprocates in the direction of the length of the tooth, whether of a spur or bevel gear, since most of the devices will produce either by merely changing the angular adjustment of the blank-holder. The subclass also contains machines for "broaching" teeth or even complete gears by a single forward movement of the cutter.
9. **GEAR-CUTTING, RECIPROCATING-CUTTER, TOOTH-CURVE GENERATING.** Machines in which a reciprocating cutter, often of rack-tooth outline, is given also a tangential or rotary lateral movement such as will generate a theoretically correct tooth curve on the blank.
10. **GEAR-CUTTING, RECIPROCATING-CUTTER, TEMPLET-GUIDE.** Gear-planing machines, usually for producing bevel-gears, in which the tooth curve is determined by a "master-tooth" or templet, which controls the movement of either the cutter or the blank.
11. **MILLING.** Instruments for shaping material, usually metal, by means of toothed rotary cutters which actually sever portions of the material by a clean cut, as distinguished from rotary disks, etc., which merely abrade.
12. **MILLING, PORTABLE.** Machines readily movable from place to place, usually having special clamping means for attachment to the work and being frequently hand-driven.
Search Classes—
77—BORING AND DRILLING, subclass 7, Drilling-machines, Portable.
82—TURNING, subclass 4, Lathes, Portable.
- 12.5. **MILLING, PORTABLE, VALVE-REFITTING.** Portable milling-machines adapted for attachment to globe-valves to dress the valve-seat.
13. **MILLING, PATTERN-CONTROLLER.** Machines for producing predetermined forms in which the movement of either the cutter or the work is controlled by a pattern or templet.
14. **MILLING, MOVABLE CUTTER-AXIS, AXIAL.** Machines in which the cutter-axis may be moved in the direction of its length during the progress of the cut.

CLASS 90—Continued.

15. **MILLING, MOVABLE CUTTER-AXIS, LATERAL.** Machines in which the cutter-axis may be moved during the cut in a direction at an angle, usually a right angle, to its length. This motion is the necessary feed-motion.
Search Class—
90—GEAR-CUTTING, MILLING, AND PLANING, subclasses 12, Milling, Portable, and 13, Milling, Pattern-controller.
16. **MILLING, ADJUSTABLE CUTTER-AXIS.** Milling-machines in which the cutter-axis is capable of either longitudinal or lateral adjustment in substantially straight lines, the cutter-axis, however, remaining stationary during the cutting operation.
17. **MILLING, ADJUSTABLE CUTTER-AXIS, ANGULAR.** Machines in which the cutter-axis, though stationary during the cutting operation, is capable of angular adjustment in one or more planes.
18. **MILLING, STATIONARY CUTTER-AXIS.** Machines in which the cutters have rotary motion only, the feed being effected by moving the work.
Search Class—
90—GEAR-CUTTING, MILLING, AND PLANING, subclass 13, Milling, Pattern-controller.
19. **MILLING, STATIONARY CUTTER-AXIS, VERTICAL.** Machines in which the cutter-axis is placed vertical to facilitate the use of "end mills," usually called "vertical" milling-machines.
20. **MILLING, STATIONARY CUTTER-AXIS, ROTATING WORK-HOLDER.** Machines with stationary cutter-axes having means for rotating the work on its own axis, so as to produce articles of circular cross-section or arc-shaped cuts.
21. **MILLING, WORK-FEEDS.** Devices for bringing the work into operative contact with the cutting mechanism, usually in machines with stationary cutter-axes.
Search Class—
90—GEAR-CUTTING, MILLING, AND PLANING, subclass 13, Milling, Pattern-controller.
22. **MILLING, WORK-FEEDS, BACKLASH-COMPENSATORS.** Devices for removing backlash or wear from screw-feeds, rack-and-pinion feeds, etc., to prevent the work from drawing under the cutter.
23. **MILLING, TAIL-STOCKS.** Tail-stocks with angularly-adjustable centers or other features particularly adapting them to milling-machines.
Search Class—
82—TURNING, subclass 31, Lathes, Tail-stocks.
24. **PLANING.** Machines and devices for removing material, usually metal, from a work-piece, mainly by means of comparatively light cuts of a non-rotary tool or series of such tools, between which tools and the work-pieces there is relative reciprocatory movement in substantially straight lines. Planing also includes a few devices for producing plane surfaces in which there is relative rotation in the same plane as the surface acted upon between tool and work and for producing curved surfaces by modifying the reciprocatory rectilinear travel of either tool or work.
25. **PLANING, SOFT-METAL.** Machines and devices for operating on type-metal, stereotypes, battery-plates, etc. They are usually characterized by broad cutters which cover at one cut the entire surface to be finished and by correspondingly-modified driving means.
Search Class—
144—WOODWORKING, subclass 121, Planers, Reciprocating-cutter.
26. **PLANING, SOFT-METAL, CYLINDRICAL STEREOTYPES.** Machines for finishing the concave surfaces of stereotype forms for cylinder-presses.
Search Class—
90—GEAR-CUTTING, MILLING, AND PLANING, subclasses 29-32, Planing, Curved surfaces.
27. **PLANING, SOFT-METAL, DOUBLE-RACK CUTTER-DRIVE.** Machines in which the broad cutter is actuated by a rack secured at each end thereof, the racks being driven by suitably-mounted pinions.
28. **PLANING, SOFT-METAL, ROLLER-FEED.** Machines in which the metal is fed past the cutters by rolls after the manner of wood-planing machines.
Search Class—
144—WOODWORKING, in the subclasses under Feed and presser mechanisms, Rolls, Feed.
29. **PLANING, CURVED SURFACES, ROLL-GROOVING.** Machines for scoring the surfaces of grinding and crushing rolls, etc., with longitudinal, helical, sinuous, or other grooves.

CLASS 90—Continued.

30. **PLANING, CURVED SURFACES, CYCLOIDS.** Special machines for producing rotary pump and blower pistons, etc., the cross-sectional outlines of which are made up wholly or in part of cycloidal curves.
31. **PLANING, CURVED SURFACES, Laterally-Moving CUTTER.** Machines in which the curved surface is produced by a tool given a feeding movement in a curved path, the work meanwhile reciprocating in a path substantially perpendicular to the plane in which the tool moves.
- Search Class—**
90—GEAR-CUTTING, MILLING, AND PLANING, subclasses 30, Planing, Curved surfaces, Cycloids; 29, Planing, Curved surfaces, Roll-grooving, and 26, Planing, Soft-metal, Cylindrical stereotypes.
32. **PLANING, CURVED SURFACES, Laterally-Moving WORK.** Machines which give the work both lateral and longitudinal movement with reference to a relatively stationary cutter.
- Search Class—**
90—GEAR-CUTTING, MILLING, AND PLANING, subclasses 30, Planing, Curved surfaces, Cycloids; 29, Planing, Curved surfaces, Roll-grooving, and 26, Planing, Soft-metal, Cylindrical, Stereotypes.
33. **PLANING, BROACHING.** Machines and appliances for finishing surfaces, cutting slots, etc., by a single forward movement of either tool or work, the tool having usually a succession of gradually-elevated cutting-points which effect the same result as continued reciprocations of a single pointed tool.
34. **PLANING, PLANERS, RECIPROCATING-BED.** Machines having a cutter-head mounted on a cross-rail or similar supporting device and a work-holding bed reciprocating on suitable ways to present the work to the cutter.
35. **PLANING, PLANERS, RECIPROCATING-BED, RACK-DRIVE.** Machines in which the bed is reciprocated by means of an attached rack with which meshes the reversely-rotated driving-gear.
36. **PLANING, PLANERS, RECIPROCATING-BED, SCREW-DRIVE.** Machines in which the bed is reciprocated by an intermeshing nut and longitudinally-arranged screw.
37. **PLANING, PLANERS, RECIPROCATING-BED, CROSS-RAILS.** Adjustable rails extending horizontally from the uprights of the planer above the reciprocating bed to support and provide feeding-ways for the cutter-head.
38. **PLANING, PLANERS, RECIPROCATING-CUTTER, HORIZONTAL.** Machines and devices, usually known to the trade as "shapers," in which the work is held stationary while the cutter is horizontally reciprocated to effect the cut.
39. **PLANING, PLANERS, RECIPROCATING-CUTTER, HORIZONTAL, OSCILLATING LINK-DRIVE.** Machines having a slotted link pivoted in a vertical plane, usually at its lower end, in an upright pillar, and movably connected at its upper end to the horizontal tool-carrying ram, the link being driven by suitable gearing and ordinarily affording a quick return for the cutter.
40. **PLANING, PLANERS, RECIPROCATING-CUTTER, HORIZONTAL, CRANK-DRIVE.** Machines in which the cutter is horizontally reciprocated by a crank and connecting-rod.
41. **PLANING, PLANERS, RECIPROCATING-CUTTER, HORIZONTAL, RACK-DRIVE.** Machines in which the horizontally-reciprocating cutter-carrying ram is actuated through an attached rack and suitable reversing driving mechanism.
42. **PLANING, PLANERS, RECIPROCATING-CUTTER, HORIZONTAL, SCREW-DRIVE.** Machines in which the tool-head is actuated by screw-gearing, usually an attached nut and an intermeshing screw, with suitable reversing driving mechanism.
43. **PLANING, PLANERS, RECIPROCATING-CUTTER, VERTICAL.** Machines in which the work is usually clamped to a horizontal bed while the cutter is vertically reciprocated. This type of machine includes most of the tools known as "slotters" and "key-seaters."
44. **PLANING, PLANERS, RECIPROCATING-CUTTER, VERTICAL, CRANK-DRIVE.** Machines of the "slotter" type having vertically-reciprocating cutter-heads actuated by a crank and connecting-rod.
45. **PLANING, PLANERS, RECIPROCATING-CUTTER, VERTICAL, CRANK-DRIVE, INVERTED.** Machines with vertically-reciprocating cutter-carriers in which the work-holder is located at the top of the frame, while the actuating-crank is beneath the work-securing means—a type of machine frequently used for key-seating.

CLASS 90—Continued.

46. **PLANING, PLANERS, RECIPROCATING-CUTTER, VERTICAL, RACK-DRIVE.** Machines in which the vertically-reciprocating cutter is actuated by means of an attached rack and a suitable intermeshing driving-train.
47. **PLANING, PLANERS, RECIPROCATING-CUTTER, VERTICAL, RACK-DRIVE, INVERTED.** Machines with vertically-reciprocating cutter-carriers having a superposed work table or support with the rack-and-pinion cutter-driving means located beneath it.
48. **PLANING, PLANERS, REVERSING MECHANISMS.** Devices for changing the direction of motion of either the work-table or cutter-carrying ram of planers.
49. **PLANING, PLANERS, TOOL-FEEDS.** Devices for giving the tool-heads of planers, "shapers," etc., an intermittent-feed motion in a direction at right angles to the direction of the cut.
50. **PLANING, PLANERS, TOOL-FEEDS, CLUTCH-BOXES.** Devices for giving an impulse to the feeding mechanism of a planer at the beginning or end of a stroke and then yielding frictionally or positively disengaging during the remainder of the stroke; usually in the form of frictionally-engaging disks, one attached to the reversible driving-shaft and the other to a feed-rod and oscillating between fixed stops.
51. **PLANING, PLANERS, TOOL-FEEDS, STOP MECHANISMS.** Devices for disengaging the intermittent-feed mechanism at any predetermined point.
52. **PLANING, PLANERS, TOOL-HEADS.** Mechanisms for supporting, adjusting, and releasing the cutting-tools of planers.
53. **PLANING, PLANERS, TOOL-HEADS, OSCILLATING DOUBLE CUTTER.** Tool-heads supporting a pair of cutters or a two-edged single cutter in such a manner as to cut in both directions of travel, one cutting edge being swung out of contact with the work while the other is acting.
54. **PLANING, PLANERS, TOOL-HEADS, PIVOTED CUTTER-RELEASE.** Tool heads and holders having cutters so pivoted as to rest against a backing-piece on the cutting stroke and swing clear of the work on the return stroke.
55. **PLANING, PLANERS, TOOL-HEADS, CUTTER-LIFTERS.** Devices for positively releasing the cutter and holding it out of contact with the work during the return stroke.
56. **INDEXING.** Complete devices, gear-trains, etc., for automatically spacing gears and other articles through aliquot parts of a circumference to produce a regular series of teeth or grooves.
- Search Classes—**
90—GEAR-CUTTING, MILLING, AND PLANING, subclass 1, Gear cutting.
73—MEASURING INSTRUMENTS, subclass 13, Dividing engines.
77—BORING AND DRILLING, subclass 64, Appliances, Work-Supports, Indexing.
57. **INDEXING, INDEX-HEADS.** That portion of the indexing mechanism which includes an equally-divided disk or cylinder, means for intermittently rotating such divided part or a concentric engaging device, means for interlocking the said parts, and usually a center for supporting one end of the blank operated upon.
- Note.**—Some form of indexing or spacing mechanism is essential to all gear-cutting and many milling machines, so that a complete search on such devices must necessarily cover both those main subclasses. The subclasses of Indexing and Index-heads include only such patents and cross-references as contain claims to and are therefore supposed to show novel features in such mechanisms.
- Search Classes—**
90—GEAR-CUTTING, MILLING, AND PLANING, subclass 1, Gear cutting.
73—MEASURING INSTRUMENTS, subclass 13, Dividing engines.
77—BORING AND DRILLING, subclass 64, Appliances, Work-Supports, Indexing.
58. **WORK-TABLES.** Movable or stationary tables for supporting the work operated upon or the clamp for securing such work. They are usually provided with slots for securing work and with adjusting means.
59. **WORK-HOLDERS.** Miscellaneous devices for supporting or securing work-pieces while being acted upon by planing, milling, or gear-cutting cutters.
60. **WORK-HOLDERS, MACHINE-VISES.** Devices with movable gripping-jaws adapted to be secured to machine-tables to clamp the work while being acted upon.
- Search Class—**
51—TOOLS, subclass 17, Vises and subclasses thereunder.
61. **WORK-HOLDERS, MACHINE-VISES, ANGULARLY ADJUSTABLE JAWS.** Vises having adjustable jaws or jaw-pieces adapted to clamp work with non-parallel sides.

CLASS 91.—COATING.

DEFINITIONS.

Class.

This class embraces machines and processes for applying and spreading coating material over various objects. The particular coating substance is immaterial to this class, as is also the object to which it is applied, except as indicated in the titles of special subclasses.

The machines are classified on the structure of the spreading mechanism.

Special machines are excluded from this class except in those cases where the coating operation is in the main capable with slight changes, principally in the proportions, of a more general use for coating.

Combined machines are excluded from this class when the operations other than coating limit the machines to some other art.

Coating parts or portions of the object with a view to an ornamentation of the object, such as printing in colors or coating in patterns or stenciling, are also excluded. When, however, the mechanism is the same as that for spreading the coating material entirely over the object with a spreader too narrow to entirely cover the object with the coating material or with a plurality of narrow spreaders to cover the object with a series of stripes, such patents are included in this art under subclass 12, Special machines, Striping.

The processes are classified on the steps employed in applying the coating. Machine processes are classified in subclass 68, Processes, and are cross-referenced into the appropriate machine subclass.

Processes which consist merely in applying a particular and named coating composition to an object are classified either under class 134, LIQUID COATING COMPOSITIONS, or under class 106, PLASTIC COMPOSITIONS.

Machines specially adapted for coating with metal are classified in this class under the title "With metal." Machines which while adapted for coating with metal are also capable of general application in the coating art are classified in the proper general machine subclasses.

Processes for coating with metal are classified under "Processes, With metal." They are limited to those processes of applying a metal coating that are dependent on some physical or chemical property of the metal to effect a physical or chemical change in the metal coating during the coating process. Processes for applying a coating of metal not limited as above stated are classified in the general process subclasses of coating. For example, a process for applying a coating of metallic powder which is in the same physical condition after application as before would be classified in a general process coating subclass. A process for coating which consisted in applying a metallic powder and then heating the same to fusion, the physical condition of the same being thereby changed, would be classified in the proper subclasses under "Processes, With metal."

Processes for making compound metal stock by welding or soldering or by welding, soldering, or other molecular adhesion combined with some metal working operation are classified in class 29, METAL WORKING, subclasses 188, Metal stock, Processes, Compound bars and tubes, and 189, Metal stock, Processes, Compound plate.

Processes for welding dissimilar metals by the application of heat and pressure are classified in class 78, METAL FORGING AND WELDING, subclass 93, Welding, Processes, Dissimilar metals.

Coating with metal which involves the use of a mold or its equivalent is classified in class 22, METAL FOUNDRY. Where the metal moves through the mold or die, it is classified in class 207, SHAPING FLUID METAL.

Coating with metal by electrodeposition only is classified in class 204, ELECTROCHEMISTRY.

Processes for uniting articles by coating the same with hard or soft solder are classified in class 113, SHEET METAL WARE, MAKING, subclass 112, Soldering, Processes.

Coating with metallic compounds is classified in the general process subclasses of coating, except those compounds in which an element of the same is furnished by the material on which a coating is to be produced. For example, forming an insoluble coating of lead chromate on lead by treating the same with a solution of bichromate of potassium would not be classified in this class, but in class 148, ANNEALING AND TEMPERING, subclass 41, Iron oxides.

Processes which are a combination of general coating and coating with metal are classified in the general coating subclasses and cross-referenced into the "With metal" subclasses.

Processes which in addition to coating with metal include steps having in view the production of a design are classified in class 41, ORNAMENTATION.

A process for coating a wire rod with metal and drawing it is classified in class 205, METAL DRAWING, subclass 21, Wire, Processes.

Articles coated with metal by processes in this class are classified herein under the processes by which they are coated unless they are such articles as fall within other specific article classes.

An alloy for coating is classified in class 75, METALLURGY, subclass 1, Alloys; a composition including a metal and a flux, in same class, subclass 187, Fluxes.

Metal coating compositions may also be classified in class 134, LIQUID COATING COMPOSITIONS, and class 106, PLASTIC COMPOSITIONS.

For applying metallic leaf see class 41, ORNAMENTATION, subclass 37, Surface type, Applied objects, Metallic leaf.

CLASS 91.—Continued.

Subclasses.

1. SPECIAL MACHINES, BORDERING LETTER-PAPER. Instruments for stacking, holding, and coating the borders of letter-paper for making bordered stationery.

2. SPECIAL MACHINES, CONFECTIONS AND PILLS. Miscellaneous machines for covering confections, cakes, and pills with sugar or chocolate coating.

3. SPECIAL MACHINES, CONFECTIONS AND PILLS, FOUNTAIN. Machines in which the coating is applied to the confections or pills by means of a fountain—that is, the coating is showered, sprayed, poured, or sifted over the confections or pills.

Search Class—

91—COATING, subclass 43, Machines, Fountain.

4. SPECIAL MACHINES, CONFECTIONS AND PILLS, IMMERSION. Machines in which the articles being treated are immersed in a bath of coating material.

Search Class—

91—COATING, subclass 46, Machines, Immersion.

5. SPECIAL MACHINES, CONFECTIONS AND PILLS, IMMERSION, CHARGERS. Instruments for arranging and placing the pills or confections on the holders used in immersing the pills and confections in the coating material.

Search Class—

91—COATING, subclass 60, Work-holders.

6. SPECIAL MACHINES, CONFECTIONS AND PILLS, IMMERSION, DIPPING IMPLEMENTS. Instruments for holding and immersing confections and pills in the coating material, also racks and trays for holding the articles after they have been coated.

Search Class—

91—COATING, subclass 46, Machines, Immersion.

7. SPECIAL MACHINES, CONFECTIONS AND PILLS, RUMBLE. Machines in which pills and confections are coated by placing them in a vessel containing coating material and rolling them around in contact with the coating material and with each other. The vessel itself may be rotated or the vessel may be stationary, the articles being rolled around by rotating blades, or both the vessel and blades may be rotated.

Search Class—

91—COATING, subclass 52, Machines, Rumble.

7.5. SPECIAL MACHINES, ELECTROTYPE MOLDS. For coating molds from which an electrotpe is to be made with a thin layer of conductive material, usually graphite, and not falling within the "With metal" subclasses.

8. SPECIAL MACHINES, FLOCKING. Machines for coating paper or other fabrics with flock.

9. SPECIAL MACHINES, MARBLING. Machines for producing a so-called "marbled surface" on articles by distributing and floating drops of variously-colored coating material over a supporting liquid, agitating the drops to form mottled streaks, and bringing the object to be coated into contact with the floating coating material.

10. SPECIAL MACHINES, PHOTOGRAPHIC FILM AND PLATE. Machines for spreading sensitive emulsion coatings on films, plates, or fabric.

Search Class—

91—COATING, subclass 60, Processes, Photographic film and plate.

11. SPECIAL MACHINES, PITCHING CASKS. Machines for coating the insides of barrels and casks with pitch or other coating material.

Search Class—

51—GRINDING AND POLISHING, subclass 14, Metal, Rumbles.

12. SPECIAL MACHINES, STRIPING. Machines for spreading coating material in lines or stripes.

Search Class—

111—SEEDERS AND PLANTERS, subclass 41, Land-markers, Liquid and powder.

12.1. SPECIAL MACHINES, WITH METAL, COMBINED-MACHINES. Machines which perform some operation on the article additional to that set forth in any of the "With metal" subclasses and not excluded by the class definition. Machines for coating with flux and coating with metal are classified herein only when the fluxing operation is of general application; otherwise they are classified on the metal coating operation.

CLASS 91—Continued.

12.2. SPECIAL MACHINES, WITH METAL, MISCELLANEOUS. Miscellaneous apparatus specially adapted for applying a coating of metal.

12.3. SPECIAL MACHINES, WITH METAL, PLATES. Apparatus for coating sheets or plates with metal, except as hereinafter provided.

12.4. SPECIAL MACHINES, WITH METAL, PLATES, MIRRORS. Apparatus for coating sheets or plates, usually of glass, with metal for making mirrors, except as hereinafter provided.

Search Class—

91—COATING, subclass 10, Special machines, Photographic film and plate.

12.5. SPECIAL MACHINES, WITH METAL, IMMERSION. Miscellaneous apparatus specially adapted for coating articles with metal by immersing or dipping the same into a bath containing the coating metal.

Search Classes—

91—COATING, subclass 46, Machines, Immersion, and the subclasses referred to in the definition thereto.

18—PLASTICS, subclass 24, Molding devices, Dipping.

113—SHEET METAL WARE, MAKING, subclasses 78, Soldering, Cans, Head seam, Bath.

148—ANNEALING AND TEMPERING, subclasses 34, Hardening apparatus; 35, Bands and wire, and 36, Clamps.

204—ELECTROCHEMISTRY, subclasses 5, Electrolysis, Aqueous bath, Apparatus, and 11, Electrolysis, Aqueous bath, Depolarizing and burnishing.

12.6. SPECIAL MACHINES, WITH METAL, IMMERSION, WORK CONVEYING. Apparatus of the type indicated for conveying the material to be coated to, from, or through the metal bath and not of general application.

Search Classes—

91—COATING, subclass 46, Machines, Immersion, and the subclasses mentioned in the definition thereto.

18—PLASTICS, subclass 24, Molding devices, Dipping.

51—GRINDING AND POLISHING, subclass 15, Metal, Sheet metal and wire.

101—PRINTING, subclasses under "Feeding."

113—SHEET METAL WARE, MAKING, all subclasses of bath type under "Soldering," and subclass 113, Work feeders.

126—STOVES AND FURNACES, subclass 272, Liquid sterilizers.

141—WASHING APPARATUS, subclass 9, Dish cleaners.

148—ANNEALING AND TEMPERING, subclasses 42, Pickling and swilling, and 34, Hardening apparatus, and the subclasses thereunder.

193—CONVEYERS, for conveyers of general application.

204—ELECTROCHEMISTRY, subclass 11, Electrolysis, Aqueous bath, Depolarizing and burnishing.

12.7. SPECIAL MACHINES, WITH METAL, IMMERSION; WORK CONVEYING, ROLLS. Machines of the type, indicated in which the article is guided or conveyed to, from, or through the coating bath between cooperating rolls and not of general application. These rolls may also aid in the coating operation.

Search Classes—

91—COATING, subclass 48, Machines, Roller, and the subclasses referred to in the definition thereto, and subclass 59.2, With metal, Finishing, Rolls.

101—PRINTING, subclasses under "Feeding."

13. COMBINED MACHINES. Embraces that class of machines which perform in addition to a coating operation some other function upon the material being treated.

Note.—Machines performing combined operations for making particular articles or coating particular objects are classified in this class under Special machines.

14. COMBINED MACHINES, COATING AND CUTTING. Machines in which the material being treated in addition to being coated is subjected to the action of a cutting mechanism.

Search Class—

216—LABEL PASTING AND PAPER HANGING, subclasses 5, Paper hanging, Coating and affixing apparatus; 6, Paper hanging, Coating and affixing apparatus, Hand; 7, Paper hanging, Affixing apparatus, and 21, Machines, Strip, Severing, and subclasses thereunder.

15. COMBINED MACHINES, COATING AND FOLDING. Machines in which the material being treated is folded after being coated.

Search Class—

91—COATING, subclass 55, Dryers and coolers.

16. COMBINED MACHINES, COATING AND PRINTING. Machines in which the material being treated is run through a printing-press either before or after the coating operation.

17. COMBINED MACHINES, COATING AND STRETCHING. Machines in which the material being treated is coated and stretched.

18. MACHINES. Miscellaneous machines and apparatus not otherwise classifiable for applying and spreading a coating on an object or article.

19. MACHINES, BRUSH, FOUNTAIN, AND ROLLER. Machines in which the coating is spread by the three above distinct submechanisms, any one of which alone would effect a distribution or spreading of coating material over the object, but probably not so perfectly or so thoroughly as by the successive or combined action of the three.

CLASS 91—Continued.

20. MACHINES, BRUSH, FOUNTAIN, AND SCRAPER. Machines in which the coating is spread by the three above distinct submechanisms, any one of which alone would effect a distribution or spreading of coating material over the object, but probably not so perfectly or so thoroughly as by the successive or combined action of the three.

21. MACHINES, BRUSH, IMMERSION, AND ROLLER. Machines in which the coating is spread by the three above distinct submechanisms, any one of which alone would effect a distribution or spreading of coating material over the object, but probably not so perfectly or so thoroughly as by the successive or combined action of the three.

22. MACHINES, BRUSH, IMMERSION, AND SCRAPER. Machines in which the coating is spread by the three above distinct submechanisms, any one of which alone would effect a distribution or spreading of coating material over the object, but probably not so perfectly or so thoroughly as by the successive or combined action of the three.

23. MACHINES, FOUNTAIN, ROLLER, AND WEB. Machines in which the coating is spread by the three above distinct submechanisms, any one of which alone would effect a distribution or spreading of coating material over the object, but probably not so perfectly or so thoroughly as by the successive or combined action of the three.

24. MACHINES, IMMERSION, ROLLER, AND SCRAPER. Machines in which the coating is spread by the three above distinct submechanisms, any one of which alone would effect a distribution or spreading of coating material over the object, but probably not so perfectly or so thoroughly as by the successive or combined action of the three.

25. MACHINES, BRUSH AND FOUNTAIN. Machines in which the coating is spread by the two above distinct submechanisms, either of which alone would effect a distribution or spreading of coating material over the object, but probably not so perfectly or so thoroughly as by the successive or combined action of both.

Note.—This subclass is to be distinguished from subclass 39, Machines, Brush, Fountain-feed, since in the latter the fountain is employed to supply the coating material to the brush, while in this class the fountain as well as the brush spreads the coating material directly upon and over the object.

Search Class—

91—COATING, subclasses 19, Machines, Brush, fountain, and roller, and 20, Machines, Brush, fountain, and scraper.

26. MACHINES, BRUSH AND IMMERSION. Machines in which the coating material is spread over the object by brushes and by immersing the object in the coating material.

Search Class—

91—COATING, subclass 22, Machines, Brush, immersion, and scraper.

27. MACHINES, BRUSH AND ROLLER. Machines in which the coating is spread by the two above distinct submechanisms, either of which alone would effect a distribution or spreading of coating material over the object, but probably not so perfectly or so thoroughly as by the successive or combined action of both.

Search Class—

91—COATING, subclasses 19, Machines, Brush, fountain, and roller, and 21, Machines, Brush, immersion, and roller.

28. MACHINES, BRUSH AND WEB. Machines in which the coating is spread by the two above distinct submechanisms, either of which alone would effect a distribution or spreading of coating material over the object, but probably not so perfectly or so thoroughly as by the successive or combined action of both.

29. MACHINES, FOUNTAIN AND ROLLER. Machines in which the coating is spread by the two above distinct submechanisms, either of which alone would effect a distribution or spreading of coating material over the object, but probably not so perfectly or so thoroughly as by the successive or combined action of both.

Search Class—

91—COATING, subclass 19, Machines, Brush, fountain, and roller.

30. MACHINES, FOUNTAIN AND SCRAPER. Machines in which the coating is spread by the two above distinct submechanisms, either of which alone would effect a distribution or spreading of coating material over the object, but probably not so perfectly or so thoroughly as by the successive or combined action of both.

Search Class—

91—COATING, subclass 20, Machines, Brush, fountain, and scraper.

31. MACHINES, IMMERSION AND ROLLER. Machines in which the coating is spread by the two above distinct submechanisms, either of which alone would effect a distribution or spreading of coating material over the object, but probably not so perfectly or so thoroughly as by the successive or combined action of both.

Search Classes—

91—COATING, subclasses 21, Machines, Brush, immersion, and roller, and 12.5, Special machines, with metal, immersion, and subclasses thereunder.

8—BLEACHING AND DYEING, subclass 19, Open vats.

CLASS 91—Continued.

32. **MACHINES, IMMERSION AND SCRAPER.** Machines in which the coating is spread by the two above distinct submechanisms, either of which alone would effect a distribution or spreading of coating material over the object, but probably not so perfectly or thoroughly as by the successive or combined action of both.

Search Classes—

- 91—COATING, subclass 22, Machines, Brush, immersion, and scraper.
112—SEWING-MACHINES, subclass 28, Wax-thread.

33. **MACHINES, ROLLER AND SCRAPER.** Machines in which the coating is spread by the two above distinct submechanisms, either of which alone would effect a distribution or spreading of coating material over the object, but probably not so perfectly or thoroughly as by the successive or combined action of both.

Search Class—

- 91—COATING, subclass 24, Machines, Immersion, roller, and scraper.

34. **MACHINES, ROLLER AND WEB.** Machines in which the coating is spread by the two above distinct submechanisms, either of which alone would effect a distribution or spreading of coating material over the object, but probably not so perfectly or thoroughly as by the successive or combined action of both.

Search Class—

- 91—COATING, subclass 23, Machines, Fountain, roller, and web.

35. **MACHINES, SCRAPER AND WEB.** Machines in which the coating is spread by the two above distinct submechanisms, either of which alone would effect a distribution or spreading of coating material over the object, but probably not so perfectly or thoroughly as by the successive or combined action of both.

36. **MACHINES, ABRASION.** Machines in which the coating material in a soft or friable condition is held stationary and against the object or article to be coated, motion being imparted to the object, or in which the object to be coated is held stationary and the coating material is moved and rubbed over the object.

37. **MACHINES, BRUSH.** Machines not otherwise classifiable for spreading a coating by means of a brush alone. The term "brush" includes, in addition to the structure ordinarily known by that name, all structures in which a flexible pile or padded surface is used to spread or smear the coating over the object.

Search Class—

- 91—COATING, subclasses 19, Machines, Brush, fountain, and roller; 20, Machines, Brush, fountain, and scraper; 21, Machines, Brush, immersion, and roller; 22, Machines, Brush, immersion, and scraper; 26, Machines, Brush and immersion, and 27, Machines, Brush and roller.

38. **MACHINES, BRUSH, CAPILLARY FEED.** Machines in which the coating material is fed to the spreading-brush by capillary action.

Search Class—

- 15—BRUSHING AND SCRUBBING, subclass 66, Fountain-brushes, Mucilage.

39. **MACHINES, BRUSH, FOUNTAIN-FEED.** Machines in which the coating material flows from the supply-reservoir over or through the brush which spreads the material over the surface of the object.

Search Class—

- 15—BRUSHING AND SCRUBBING, subclass 49, Fountain-brushes, Paint.

40. **MACHINES, BRUSH, ROLLER-FEED.** Machines in which the spreading-brush contacts with a roller which is supplied with coating material in any suitable manner.

41. **MACHINES, BRUSH, TANK-FEED.** Machines in which the spreading-brush revolves in a tank located below the brush and containing the coating material.

42. **MACHINES, CENTRIFUGAL.** Machines in which the coating material, applied to the object in any suitable manner, is spread and distributed over the surface by rapidly rotating the object.

43. **MACHINES, FOUNTAIN.** Machines in which the coating material is merely flowed, sprayed, scattered, or sifted over the object without any intermediate distributing mechanism.

Search Class—

- 91—COATING, subclasses 19, Machines, Brush, fountain, and roller; 20, Machines, Brush, fountain, and scraper, and 25, Machines, Brush and fountain.

44. **MACHINES, FOUNTAIN, PROJECTION.** Machines in which the coating material is forcibly sprayed, thrown, or projected against the article to be coated by any means or mechanism other than by "air-brushes."

45. **MACHINES, FOUNTAIN, PROJECTION, AIR-BRUSH.** Machines in which a liquid coating material is forcibly sprayed by an air-blast over the object to be coated.

CLASS 91—Continued.

46. **MACHINES, IMMERSION.** Machines and apparatus for coating objects by immersing, dipping, or passing them through a bath of coating material. This subclass also includes apparatus for holding articles while being dipped and after being dipped and the construction of tanks for holding the coating material used when the whole coating operation is one of immersion.

Search Classes—

- 91—COATING, subclasses 21, Machines, Brush, immersion, and roller; 22, Machines, Brush, immersion, and scraper; 24, Machines, Immersion, roller, and scraper; 26, Machines, Brush and Immersion; 31, Machines, Immersion and roller; 32, Machines, Immersion and scraper, and 12.5, Special machines, With metal, Immersion and subclasses thereunder.
8—BLEACHING AND DYEING, subclass 19, Open vats.
99—PRESERVING, subclass 12, Wood saturation.
149—HIDES, SKINS, AND LEATHER, subclass 10, Apparatus, Vats.
157—WHEELWRIGHT-MACHINES, subclass 7, Tire-setters, Trestles and tanks.

47. **MACHINES, IMPRESSION.** Machines in which the object to be coated is pressed against a surface coated with the coating material. The coating material is thus pressed into the object.

48. **MACHINES, ROLLER.** Miscellaneous machines in which the coating material is spread or distributed over the object by rollers alone.

Search Class—

- 91—COATING, subclasses 19, Machines, Brush, fountain, and roller; 21, Machines, Brush, immersion, and roller; 23, Machines, Fountain, roller, and web; 24, Machines, Immersion, roller, and scraper; 27, Machines, Brush and roller; 29, Machines, Fountain and roller; 31, Machines, Immersion and roller; 33, Machines, Roller and scraper, and 34, Machines, Roller and web.

49. **MACHINES, ROLLER, FOUNTAIN-FEED.** Machines in which the coating material is spread over the object by rollers, the coating material being supplied to the distributing-rollers from a fountain or elevated reservoir, so that the coating material flows directly to and over the distributing-rollers.

Search Class—

- 101—PRINTING, subclass 74, Inking apparatus, Fountains.

50. **MACHINES, ROLLER, ROLLER-FEED.** Roller-machines in which the coating material is carried to the distributing-rollers from any suitable source or supply-tank by intermediate rollers.

51. **MACHINES, ROLLER, TANK-FEED.** Roller-machines in which the distributing rollers rotate in a tank containing the coating material and in contact with the coating material.

Search Class—

- 91—COATING, subclass 33, Machines, Roller and scraper.

52. **MACHINES, RUMBLE.** Machines in which small articles are coated by placing them in a barrel-like receptacle containing coating material and rolling the articles around in contact with said material and with each other. The barrel itself may be rotated, or the barrel may be held stationary and the articles moved around in the barrel by rotating blades, or the articles may be rolled around by both rotating the barrel and rotating the blades simultaneously.

Search Classes—

- 91—COATING, subclasses 7, Special machines, Confections and Pills; Rumble, 11, Special machines, Pitching casks.
51—GRINDING AND POLISHING, subclass 14, Metal, Rumbles.
149—HIDES, SKINS, AND LEATHER, subclass 11, Apparatus, Tumbling-drums.

53. **MACHINES, SCRAPER.** Machines in which the coating material is spread and distributed over the object by the action of scrapers, blades, or doctors.

Search Class—

- 91—COATING, subclasses 20, Machines, Brush, fountain, and scraper; 22, Machines, Brush, immersion, and scraper; 24, Machines, Immersion, roller, and scraper; 30, Machines, Fountain and scraper; 32, Machines, Immersion and scraper, and 33, Machines, Roller and scraper.

54. **MACHINES, WEB.** Machines in which a web, belt, or strip of textile material covered or coated with coating material is brought into contact with the object or article to be coated.

Search Classes—

- 91—COATING, subclasses 28, Machines, Brush and web; 34, Machines, Roller and web, and 35, Machines, Scraper and web.
101—PRINTING, subclass 28, Color-machines, Graining.

55. **DRIERS AND COOLERS.** Special mechanisms for drying or cooling the coating material after it has been applied to the object.

Search Class—

- 91—COATING, subclass 15, Combined machines, Coating and folding.

56. **ELEVATING DEVICES.** Mechanisms for elevating the coating material from a lower supply-reservoir to an upper distributing-reservoir or to the point where the coating is applied.

Search Class—

- 91—COATING, subclasses 40, Machines, Brush, roller-feed, and 50, Machines, Roller, Roller-feed.

CLASS 91—Continued.

57. MIXERS AND STIRRERS. Mechanisms for mixing and stirring the coating material.

Search Classes—

- 91—COATING, subclass 4, Special machines, Confections and pills, Immersion.
 83—MILLS, subclass 73, Mortar-mixers.
 94—PAVING, subclass 9, Mixers.
 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 30, Mixers, kneaders, and beaters; 35, Mixers, kneaders, and beaters, Rotary dasher, Compound rotation; 36, Mixers, kneaders, and beaters, Rotary dasher, Multiple; 38, Mixers, kneaders, and beaters, Rotary dasher, Single, and 40, Mixers, kneaders, and beaters, Rotary dasher, Single, Horizontal.
 127—SUGAR AND SALT, subclass 11, Mixers.

8. STRIPPERS. Means for stripping the coated articles from the carrier.

59. WIPERS AND DUSTERS. Mechanisms for removing surplus coating material from portions of articles intended to be kept uncoated.

- 59.1 WITH METAL, FINISHING. Miscellaneous machines and processes for treating the articles while the metal coating is in a molten condition to secure a suitable finish and uniformity in the coating, usually by avoiding surplus coating.

Search Classes—

- 91—COATING, subclass 59.8, With metal, Crystallizing, for treating a coating in a molten condition to secure a crystalline effect; subclass 55, Driers and coolers.
 29—METAL WORKING, subclass 90, Burnishing, for finishing a solidified coating by burnishing.
 51—GRINDING AND POLISHING, subclass 15, Metal, Sheet metal and wire, for finishing by abrading or polishing.
 80—METAL ROLLING, for finishing by rolling.
 205—METAL DRAWING, for finishing by drawing.

- 59.2. WITH METAL, FINISHING ROLLS. Machines and processes in which the coated article is finished by being passed through cooperating rolls while the metal coating is in a molten condition. The rolls are specially adapted by their construction or location for finishing.

Search Class—

- 91—COATING, subclass 12.7, Special machines, With metal. Immersion, Work conveying, Rolls, and the subclasses referred to in the definition thereto.

- 59.3. WITH METAL, FINISHING, SEPARATORS. Apparatus and processes for treating in bulk small articles while the coating is in a molten condition, separating the articles from each other and from the surplus adhering metal, so that when cool the articles will be clean of surplus metal and separate from each other.

- 59.4. WITH METAL, FINISHING, WIPERS. Apparatus and processes for removing surplus metal while in a molten condition by a wiping, scraping, or abrasive action.

Search Classes—

- 91—COATING, subclasses 53, Machines, Scraper, and the subclasses referred to in the definition thereto; 37, Machines, Brush, and the subclasses referred to in the definition thereto; 58, Strippers, and 59, Wipers and dusters.
 113—SHEET METAL WARE, MAKING, subclass 97, Soldering, Wipers.

- 59.8. WITH METAL, CRYSTALLIZING. Apparatus and processes for producing a crystalline effect in the metal coating.

60. WORK-HOLDERS. Devices for holding the articles while being coated.

Search Classes—

- 91—COATING, subclasses 4, Special machines, Confections and pills, Immersion; 5, Special machines, Confections and pills, Immersion, Charges; 6, Special machines, Confections and pills, Immersion, Dipping implements, and 46, Machines, Immersion.
 144—WOODWORKING, subclass 65, Match-making, Dipping-frames.

61. WORK-HOLDERS, ENAMELING-TABLES. Adjustable and movable tables for holding heated articles while the enameling material, usually in the form of a powder, is sifted or scattered over said articles.

62. WORK-HOLDERS, GRIPPER MECHANISMS. Gripping mechanisms, clamps, and jaws for carrying the articles being treated through the coating-machine.

63. IMPLEMENTS, BRUSH HOLDERS AND CLEANERS. Cabinets and other receptacles for holding paint and varnish brushes while not in use, containing provisions for cleaning the brushes or for keeping them in a soft and pliable condition.

Search Class—

- 15—BRUSHING AND SCRUBBING, subclass 6, Brush and broom supports.

64. IMPLEMENTS, PAINTERS' HOOKS. Hooks adapted to be attached to a roof, side of a building, or ladder, primarily for supporting paint-pots; but they are usually a sort of combination-tool adapted to serve other purposes in addition to that of supporting the pot.

CLASS 91—Continued.

65. IMPLEMENTS, PAINT-PROTECTORS. Devices used by painters for protecting one of two adjacent surfaces while the other is being painted.

66. IMPLEMENTS, POTS. Portable receptacles—such as pots, cups, and pails—for holding coating material while the same is being applied or so that it can readily be applied.

Search Classes—

- 91—COATING, subclass 62, Work-holders, Gripper mechanisms.
 15—BRUSHING AND SCRUBBING, subclass 6, Brush and broom supports.
 220—METALLIC SHIPPING AND STORING VESSELS, subclass 33, Buckets.

67. IMPLEMENTS, SANDERS. Hand implements for scattering sand over freshly painted or coated surfaces.

- 67.1. IMPLEMENTS, MUCILAGE HOLDERS. Receptacles of various sorts especially designed to contain liquid adhesives and facilitate the removal of the adhesives from the receptacles.

- 67.2. IMPLEMENTS, MUCILAGE HOLDERS, BRUSHES. Brushes designed for use in mucilage receptacles and the like. They are usually combined with some form of closure for the receptacle in which the brush is used.

- 67.3. IMPLEMENTS, MUCILAGE HOLDERS, SCRAPERS. Mucilage holders provided with scraping devices for removing surplus mucilage from the brush.

- 67.4. IMPLEMENTS, MUCILAGE HOLDERS, SPREADERS. Mucilage holders provided with spreading devices in the closure of the holder, which makes the use of a brush unnecessary.

Note.—Mucilage holders having brushes or sponges attached to serve as spreading devices are classified in class 15, BRUSHING AND SCRUBBING, FOUNTAIN BRUSHES, MUCILAGE.

- 67.5. IMPLEMENTS, MUCILAGE HOLDERS, SPREADERS, FLEXIBLE CAP. Mucilage holders having spreaders consisting of a flexible cap, usually rubber, having an opening at the tip, through which the mucilage escapes.

- 67.9. FABRIC COATING AND PRINTING. Includes fabrics that are either coated or impregnated and in addition printed or embossed; also processes of preparing them.

Search Class—

- 91—COATING, subclass 16, Combined machines, Coating and printing, for analogous apparatus.

68. PROCESSES. Miscellaneous processes for spreading coating material over an article or object.

- 68.1. PROCESSES, WITH METAL. Miscellaneous processes for applying a coating of metal as limited in the main definition.

- 68.2. PROCESSES, WITH METAL, COMBINED WITH ELECTRODEPOSITION. Processes in which electrodeposition of metal is at least one, but not all, of a plurality of metal coating operations. This subclass includes processes which are a combination of coating with metal by electrodeposition and coating with metal as defined in this class and may involve either one or a plurality of coatings.

Search Class

- 204—ELECTROCHEMISTRY, appropriate subclasses.

- 68.3. PROCESSES, WITH METAL, PRECIPITATION. Processes whereby the metal coating is precipitated from a solution, usually aqueous, on the surface to be coated.

Search Classes

- 75—METALLURGY, subclasses 18, Solution and precipitation; 67, Solution and precipitation, Chlorination, and 185, Solution and precipitation, Cyanids.
 134—LIQUID COATING COMPOSITIONS, subclass 24.5, Metal depositing.
 204—ELECTROCHEMISTRY, for precipitation by electrodeposition.

69. PROCESSES, PHOTOGRAPHIC FILM OR PLATE. Processes of spreading a sensitive emulsion coating material over films, plates, fabrics, tissue, paper, etc.

70. PROCESSES, WITH HEAT. Coating processes which involve the application of heat as one of the steps thereof.

- 70.1. PROCESSES, WITH HEAT, WITH METAL. Processes for applying a coating of metal involving the application of a high degree of heat to produce a physical or chemical change in the coating material.

Search Classes—

- 23—METAL WORKING, subclasses 188, Metal stock, Processes, Compound bars and tubes, and 189, Metal stock, Processes, Compound plate.
 75—METALLURGY, subclass 187, Fluxes.
 78—METAL FORGING AND WELDING, subclass 93, Welding. Processes, Dissimilar metals.
 113—SHEET METAL WARE, MAKING, subclass 112, Soldering, Processes.
 176—ELECTRIC LAMPS, subclass 4, Manufacture and repair, Apparatus, Filaments and glowers, and also subclasses 131 and 132 under Filament and glower compositions.

CLASS 91—Continued.**70.2. PROCESSES, WITH HEAT, WITH METAL, MOLTEN.**
Processes in which the coating metal is in a molten state before and when applied to the surface to be coated.**Search Classes—****22—METAL FOUNDED**, subclass 200, Processes, Casting, and the subclasses thereunder.**75—METALLURGY**, subclasses 1, Alloys, for alloys for coating, and **75—METALLURGY**, subclass 187, Fluxes, for compositions including a metal and a flux.**113—SHEET METAL WARE, MAKING**, subclass 112, Soldering, Processes.**70.3. PROCESSES, WITH HEAT, WITH METAL, MOLTEN, PREPARATION.** Processes for coating with molten metal, combined with a preparatory treatment of the material to be coated.**Search Classes—****91—COATING**, subclass 68.1, Processes, With metal, for preparatory processes for coating with metal not limited to molten metal and not otherwise classifiable.**29—METAL WORKING**, subclass 81, Scale removers and preventers.**51—GRINDING AND POLISHING.****CLASS 91—Continued.****75—METALLURGY**, subclass 187, Fluxes.**148—ANNEALING AND TEMPERING**, subclass 42, Pickling and swilling.**204—ELECTROCHEMISTRY**, subclass 7, Electrolysis, Aqueous bath, Cathodes, Cleaning.**71. PROCESSES, WITH HEAT, JAPANING.** Processes of coating surfaces of metal, wood, etc., with japan or other varnish which is dried and hardened at a high temperature in stoves or heated chambers.**72. PROCESSES, WITH HEAT, VITREOUS.** Processes of coating wood and other surfaces (except metal surfaces) with vitrifiable material and firing to vitrify the coating material and to affix it to the surface.**73. PROCESSES, WITH HEAT, VITREOUS, ON METAL.** Processes of coating metal surfaces with vitrifiable material and firing to vitrify the coating material and to affix it to the surface.**Search Class—****41—ORNAMENTATION**, subclass 26, Surface type, Pigment and the subclasses thereunder.

CLASS 92.—PAPER MAKING AND FIBER LIBERATION.

DEFINITIONS.

Class.

This class covers the preparation of paper pulp and the formation of structure from the same. It includes fluid and chemical treatment of fibrous materials for liberating and degumming fiber, whether restricted to the paper making art or otherwise.

Broadly the complete operation involves suspending disintegrated fibrous material in water, passing the mass through a shaping apparatus, which expresses the water and delivers the product in self-sustaining form.

The class includes machines and processes, also structure of product *per se*, when the invention resides in the structure produced by operations within the scope of the class.

Preliminary, subsequent, and a few intermediate operations which are not necessarily limited to this art are excluded.

When foreign material is introduced into the fibrous mass the line between this art and the plastic art is not distinct; but generally if the material introduced rather than the expressing action is primarily depended upon to bind the fibers together the invention is excluded from this class.

This class is divided into five groups, as follows:

STOCK TREATMENT, covering the reduction of the stock to a crude pulp or liberated fiber.

STUFF WORKING, refining the crude mass.

WEB FORMING, producing a continuous web of paper from the pulp.

PULP MOLDING, producing any structure or article from the pulp other than a continuous web.

FINISHING, treating the paper after it has reached a substantially dry or self-sustaining stage.

Note.—An invention comprising matter classifiable in more than one specific subclass of this class is placed in the subclass having the lowest number and cross-referenced into the subclass or subclasses having a higher number or numbers.

Note.—For further information see the subclass definitions.

Subclasses.

1. STOCK TREATMENT. Miscellaneous inventions relating to the degumming of fibrous materials and the reduction of paper stock to a crude pulpy mass. Preliminary operations which do not produce such results are excluded. When the method of liberation is designed to preserve the fiber, so that it may be employed for textile or other purposes, it is placed in one of the subclasses designated by the term "fiber."

Search Classes—

- 13—BRAKES AND GINS, and 19, CARDING, for the mechanical treatment of textile materials and small fibrous stalks.
- 13—BRAKES AND GINS, subclass 22, Rag cutters, and 19, CARDING, subclass 9, Pickers, for mechanical treatment of rag stock.
- 83—MILLS, especially subclass 75, Wood and bark, for the disintegration of larger material, such as wood. Chip graders are also found in class 83, MILLS, subclass 74, Chip graders.

2. STOCK TREATMENT, BY-PRODUCT RECOVERY. Inventions for preparing stock or liberating fiber which also include by-product recovery or which recover products from paper stock waste by operations not elsewhere classifiable. Does not include the extraction of pure chemicals when not combined with any operation of the class.

3. STOCK TREATMENT, SPECIAL PAPER STOCK. Inventions in which some particular stock is utilized for paper making purposes. The treatment of well known stock—such as rags, wood, straw, etc.—is not found here. Does not include alkaline digestive treatment.

Search Class—

- 92—PAPER MAKING AND FIBER LIBERATION, subclass 14, Stock treatment, Alkaline, Special paper stock, when hot alkaline liquor is employed in the treatment.

4. STOCK TREATMENT, FIBER. Miscellaneous treatment other than mechanical when the design is to liberate and degum the fiber rather than prepare a pulp.

In process claims falling within this class the statement that the material is crushed or broken is disregarded; but if apparatus for mechanical disintegration is also included the patent is placed in this subclass and cross-referenced, if necessary, into other subclasses.

Search Classes—

- 92—PAPER MAKING AND FIBER LIBERATION, in the "Digestive" subclasses, for liberation of fiber by digestive operations.
- 13—BRAKES AND GINS, for the mechanical breaking up of the smaller fibrous plants. The application of moisture during the breaking action does not exclude the patent from class 13.

5. STOCK TREATMENT, FIBER, BACTERIA. The liberation of fiber depending upon the presence of bacteria. Frequently called "retting"—a slow process.

CLASS 92—Continued.

6. STOCK TREATMENT, COMBINED GRINDING AND DIGESTING. The production of paper stock exclusively, and covers treatments that involve both grinding and digesting features. This does not include the mere crushing or breaking of small fibrous plants, but usually refers to the combination of mechanical disintegrating operations, such as grinding and chipping, with extended hot liquid treatment.

Patents are not cross-referenced from this subclass into the miscellaneous digestive subclass.

Search Classes—

- 92—PAPER MAKING AND FIBER LIBERATION, the "Digestive" subclasses, and the classes mentioned in the search notes thereof, especially 71, FERTILIZERS, subclass 1, Apparatus; 195, ALCOHOL, subclasses 25, Mashing, Apparatus; 26, Mashing, Apparatus, Digesters and disintegrators, and 32, Mashing, Processes.

7. STOCK TREATMENT, DIGESTIVE. The reduction of the stock to pulp by the application of hot liquid or vapor. Also, in the fiber subclasses, the liberation of the fiber is included. When a particular reagent other than water is employed, the patent falls under one of the more specific subclasses relating to this treatment.

Apparatus found in various classes may easily be adapted to this art, and extensive search may therefore be necessary for analogous structure.

Search Classes—

- 92—PAPER MAKING AND FIBER LIBERATION, subclass 6, Stock treatment, Combined grinding and digesting.
- 8—BLEACHING AND DYEING, subclass 18, Close vats.
- 34—DRIERS, subclass 30, Retort.
- 68—LAUNDRY, subclass 16, Washing machines, Boiler, and 30, Washboilers.
- 71—FERTILIZERS, subclass 1, Apparatus.
- 83—MILLS, subclasses 27, Preparing grain, Steaming and dampening, and 28, Preparing grain, Processes.
- 87—OILS, FATS, AND GLUE, especially subclasses 4, Decomposing fats; 6, Extracting oils; 12, Refining fat oils; 13, Rendering, and 16, Soap manufacture.
- 99—PRESERVING, subclasses 2, Apparatus; 5, Desiccation, and 12, Wood saturation.
- 110—FURNACES, subclass 11, Furnace structure, Wet fuel, Garbage and sewage, Closed retort.
- 122—LIQUID HEATERS AND VAPORIZERS.
- 126—STOVES AND FURNACES, subclass 348, Water heaters, Kettle furnace, Steam generators and cookers.
- 127—SUGAR AND SALT, subclasses 1, Bleaching cane juice; 10, Glucose, and 17, Sugar making.
- 195—ALCOHOL, subclasses 26, Mashing, Apparatus, Digesters and disintegrators; 28, Mashing, Apparatus, Mash tubs; 30, Mashing, Apparatus, Mash tubs, Tubular rakes; 31, Mashing, Hops; 32, Mashing, Processes; 33, Mashing, Wort, and 34, Mashing, Wort, Hopping.
- 196—MINERAL OILS, subclasses 4, Apparatus, Stills, Stirrers and scrapers, and 18, Apparatus, Stills, Supplementary heating.
- 202—CHARCOAL AND COKE, subclass 3, Charcoal, Retorts.
- 203—AMMONIA, WATER, AND WOOD DISTILLATION, especially subclass 6, Wood.
- 209—CARBONATING BEVERAGES, subclass 17, Gas generators, Furnace.
- 210—WATER PURIFICATION, subclass 19, Filters, Chemical feeders.

8. STOCK TREATMENT, DIGESTIVE, FIBER. Inventions designed to degum and preserve the fiber rather than produce a pulp.

Unless it is definitely stated that the digestive treatment is designed to isolate a fiber for textile or other general purposes the patent is not classified in any of the fiber subclasses.

9. STOCK TREATMENT, DIGESTIVE, MISCELLANEOUS REAGENTS. Inventions wherein a particular reagent other than water is described which does not fall within any of the following subclasses.

If the method is substantially an alkaline or a sulfurous acid treatment, the addition of other chemicals does not place the patent in this subclass.

10. STOCK TREATMENT, DIGESTIVE, MISCELLANEOUS REAGENTS, FIBER. Digestive treatment with miscellaneous reagents for the production of liberated fiber.

11. STOCK TREATMENT, DIGESTIVE, ACID, SULFUROUS, Digestive treatment by the well known "sulfite" process—but is broad enough to include digestive apparatus and processes when the treatment described relies upon sulfurous acid as the principal agent.

Search Class—

- 92—PAPER MAKING AND FIBER LIBERATION, subclass 19, Stock treatment, Digestive, Shells and linings, when the only disclosure is a shell or lining which may be used with this treatment.

CLASS 92—Continued.

12. STOCK TREATMENT, DIGESTIVE, ACID, SULFUROUS, FIBER. The production of liberated fiber by digestive treatment with sulfurous acid as the principal agent.

13. STOCK TREATMENT, DIGESTIVE, ALKALINE. Digestive treatment where the reagent employed is of an alkaline nature.

Search Class—

- 92—PAPER MAKING AND FIBER LIBERATION, subclass 16, Stock treatment, Digestive, Alkaline, Bleaching feature, if the treatment also involves a bleaching feature.

14. STOCK TREATMENT, DIGESTIVE, ALKALINE, SPECIAL PAPER STOCK. Alkaline digestive treatment of special paper stock as defined under subclass 3, Stock treatment, Special paper stock.

15. STOCK TREATMENT, DIGESTIVE, ALKALINE, FIBER. The production of liberated fiber by alkaline digestive treatment.

16. STOCK TREATMENT, DIGESTIVE, ALKALINE, BLEACHING FEATURE. Alkaline digestive treatment, including a bleaching feature.

Search Class—

- 8—BLEACHING AND DYEING, for bleaching of the stock unless involved with some other treatment.

17. STOCK TREATMENT, DIGESTIVE, ALKALINE, BLEACHING FEATURE, FIBER. The production of liberated fiber by an alkaline digestive treatment involving bleaching.

18. STOCK TREATMENT, DIGESTIVE, ROTARY DIGESTERS. Digestive stock treatment wherein are employed digesters designed to rotate.

In addition to the search outlined under "Digestive treatment" for analogous structures,

Search Classes—

- 34—DRIERS, subclass 5, Cylinder, Internal, Rotary horizontal.

- 75—METALLURGY, subclass 138, Roasters, Revolving, Cylinders.

- 87—OILS, FATS, AND GLUE, subclass 13, Rendering.

- 110—FURNACES, subclass 14, Furnace structure, Wet fuel, Garbage and sewage, Rotary retort.

- 122—STEAM BOILERS, subclass 13, Rotary.

- 195—ALCOHOL, subclass 22, Malting, Apparatus, Cylinders, rotary.

- 196—MINERAL OILS, subclasses 20, Coal, Retorts, Rotary, and 12, Apparatus, Stills, Rotary.

- 222—HYDRAULIC CEMENT AND LIME, subclass 7, Kilns, Rotary.

19. STOCK TREATMENT, DIGESTIVE, SHELLS AND LININGS. Shell or lining structure of the digester.

Search Classes—

- 106—PLASTIC COMPOSITIONS, subclass 30, Artificial stone, Soluble silicates, in addition to the classes noted under the "Digestive treatment" subclasses.

- 206—SPECIAL RECEPTACLES AND PACKAGES, subclass 2, Receptacles, Acid-proof.

20. STUFF WORKING. The reduction and refining of the crude or green pulp into condition to be fed to the machines or molds upon which it is to be given form. This is the miscellaneous subclass of the group and contains any means for reducing inequalities in the pulpy mass which does not fall within the more specific subclasses hereunder. This may be considered, broadly, as the second stage in the process of paper making.

Search Classes—

- 92—PAPER MAKING AND FIBER LIBERATION, subclass 37, Stuff working, Stuff chests, and the classes mentioned in the notes thereunder, for agitating devices.

- 8—BLEACHING AND DYEING, for bleaching operations when not combined with other features.

- 34—DRIERS, especially subclass 14, Floors, Fixed; 100, PRESSES, subclasses of "Expressing"; 127, SUGAR AND SALT, subclass 3, Centrifugal machines, and 210, WATER PURIFICATION, for devices for draining water from the pulp, except in the formation of a web or on a cylinder machine.

- 49—GLASS, subclass 63, Batch mixers; 83, MILLS, subclass 73, Mortar mixers; 87, OILS, FATS, AND GLUE, subclass 16, Soap manufactures; 94, PAVING, subclass 9, Mixers; 107, BREAD, PASTRY, AND CONFECTION MAKING, subclass 30, Mixers, kneaders, and beaters, and the subclasses thereunder; 127, SUGAR AND SALT, subclasses 11, Mixers, and 23, Starch; 195, ALCOHOL, subclasses 25, Mashing, Apparatus, and the subclasses thereunder, and 21, Malting, Apparatus, for similar mechanical features.

- 141—WASHING APPARATUS, subclass 12, Miscellaneous fiber and pulp washers, for washing of the pulp unless covering apparatus specially provided for in class 8, BLEACHING AND DYEING.

- 210—WATER PURIFICATION, for apparatus for collecting fiber and other materials from waste water of any operation.

21. STUFF WORKING, SPECIAL MATERIAL INCORPORATING. Any operation by which any material, except paper stock, is mixed with the stuff or pulp prior to the structure forming stage.

Search Classes—

- 92—PAPER MAKING AND FIBER LIBERATION, subclass 40, Web forming, Special material incorporating, or the subclasses thereunder, and subclass 55, Pulp molding, Special material and object incorporating, if introduced into the stuff or pulp while on the machine or mold.

- 134—LIQUID COATING COMPOSITIONS, the "Sizing" subclasses, if the invention merely covers a composition or the use of a substance or composition for giving body or surface to the paper not unique to paper making.

CLASS 92—Continued.

22. STUFF WORKING, BEATING ENGINES. Stuff working machines having a rotating beating surface with blades or projections running in proximity to an opposed cooperating surface, the stuff traveling in the direction of motion of the blades at the point of operation. In this class of machines the stuff usually travels in an endless course until sufficiently beaten.

Search Classes—

- 8—BLEACHING AND DYEING, subclass 19, Open vats.

- 19—CARDING, subclass 19, Opener beaters.

- 68—LAUNDRY, subclass 23, Washing machines, Roller and bed.

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 34, Mixers, kneaders, and beaters, Roller.

23. STUFF WORKING, BEATING ENGINES, SCREEN ATTACHMENT. Beating engines having a screen attachment for washing purposes.

Engines falling within the "Stuff working" group which have screen attachments for washing purposes are cross-referenced here when not of the beating type.

Search Class—

- 141—WASHING APPARATUS, subclass 12, Miscellaneous fiber and pulp washers, if there is no improvement in the beater.

24. STUFF WORKING, BEATING ENGINES, HORIZONTAL COURSE. Beating engines wherein the stuff-flow is substantially horizontal.

25. STUFF WORKING, BEATING ENGINES, VERTICAL COURSE. Beating engines wherein the course of the stuff is substantially vertical, so that the stuff during a portion of the travel flows above another part of the course.

26. STUFF WORKING, REFINING ENGINES. Machines designed for the final reducing or disintegrating treatment of the pulp. Are distinguished from the beating engines by the fact that the material passes in a direction substantially at right angles to the motion of the operating surface. Both the beating and refining engines contain opposed cooperating surfaces and the operations somewhat approximate grinding as distinguished from a kneading or stirring of the mass.

Search Classes—

- 92—PAPER MAKING AND FIBER LIBERATION, subclass 20, Stuff working, for reducing engines that do not fall clearly within a beating or refining subclass, but have general characteristics of beating or refining engines.

- 83—MILLS, especially subclass 75, Wood and bark, for analogous structures.

27. STUFF WORKING, REFINING ENGINES, CONE AND SHELL. Refining engines generally of the type known as "Jordan" or modifications of that type. The distinguishing characteristic is a rotary cone running in proximity to an outer cooperating shell.

Search Class—

- 83—MILLS, subclasses 13, Grinding mills, Cone and shell, and 31, Grain scourers, Conical, for analogous structure.

28. STUFF WORKING, SAND SEPARATORS. Inventions for removing sand and similar heavy particles from the stuff. The foreign matter generally settles to the bottom and is trapped, while the stuff travels on.

Search Classes—

- 92—PAPER MAKING AND FIBER LIBERATION, subclass 29, Stuff working, Strainers, and the subclasses thereunder, for inventions involving passing the stuff through a screen for separating knots, slivers, etc.

- 83—MILLS, subclass 59, Ore and coal, Separators, Washers; 103, PUMPS, subclass 64, Elements, Sand traps and strainers, and 210, WATER PURIFICATION, subclass 5, Filters, Decanters, for similar devices.

29. STUFF WORKING, STRAINERS. Inventions for working out knots, slivers, lumps, etc., from the stuff by passing it through screens.

Search Classes

- 75—METALLURGY, subclass 86, Solution and precipitation, Apparatus.

- 83—MILLS, subclasses 27, Preparing grain, Steaming and dampening; 28, Preparing grain, Processes; 26, Sifters and screens, and 59, Ore and coal.

- 146—VEGETABLE CUTTERS AND CRUSHERS, subclass 9, Crushers and graters, Rotary.

- 195—ALCOHOL, subclasses 25, Mashing, Apparatus, and the subclasses thereunder, and 35, Mashing, Wort, Purifying.

- 210—WATER PURIFICATION, subclass 16, Filters, Strainers.

30. STUFF WORKING, STRAINERS, FLAT SCREEN. Strainers having a flat screen for use in this art or apparatus supplied with a flat screen or screens only and not provided for in the following subclasses.

31. STUFF WORKING, STRAINERS, FLAT SCREEN, HORIZONTAL STATIONARY. Flat screen strainers, particularly adapted to strain pulp, which are substantially horizontal and without motion, the stuff usually being worked through by auxiliary mechanism.

32. STUFF WORKING, STRAINERS, FLAT SCREEN, HORIZONTAL STATIONARY, VERTICALLY VIBRATING DIAPHRAGM. Horizontal stationary flat screen strainers in connection with vertically moving diaphragms substantially parallel to the horizontal screens for facilitating the passage of the stuff. In some instances the diaphragm is pivoted at one edge.

CLASS 92—Continued.

33. STUFF WORKING, STRAINERS, FLAT SCREEN, SHAKING. Flat screen strainers adapted to be given a shaking or jarring motion in any direction to assist in the operation.

Search Classes—

92—PAPER MAKING AND FIBER LIBERATION, subclass 35, Stuff working, Strainers, Cylindrical rotating screen, Outward flow, for rotating screens which have also a jarring motion; subclass 29, Stuff working, Strainers, for other strainers of various forms actuated by a reciprocating movement; subclass 45, Web forming, Fourdrinier machines, Shake frames.

34—DRIERS, subclass 38, Shaking.

83—MILLS, subclasses 35, Grain scourers, Reciprocating and endless and 38, Chop graders, Shaking bolts.

130—THRESHING, subclass 15, Grain separators, Shaking screens.

34. STUFF WORKING, STRAINERS, CYLINDRICAL STATIONARY SCREEN. Stuff strainers of cylindrical form within which the stuff is generally placed and driven out as by means of beating blades.

Search Classes—

92—PAPER MAKING AND FIBER LIBERATION, subclass 35, Stuff working, Strainers, Cylindrical rotating screen, Outward flow.

127—SUGAR AND SALT, subclass 3, Centrifugal machines, if the stuff is screened by the centrifugal action of a rapidly rotating containing vessel or screen.

35. STUFF WORKING, STRAINERS, CYLINDRICAL ROTATING SCREEN, OUTWARD FLOW. Stuff working strainers of cylindrical rotating screen type wherein the stuff is supplied to the interior of a slowly rotating screen from which it escapes through the meshes to the exterior.

Search Classes—

83—MILLS, subclass 39, Chop graders, Rotary bolts.

130—THRESHING, subclass 16, Grain separators, Rotary screens.

210—WATER PURIFICATION, subclass 14, Filters, Rotary bed.

36. STUFF WORKING, STRAINERS, CYLINDRICAL ROTATING SCREEN, INWARD FLOW. Stuff working machines of the cylindrical rotating screen type wherein the stuff is supplied to the exterior of a cylindrical rotating screen and caused or permitted to flow through the screen to the interior, from which it is allowed to escape.

Search Class—

210—WATER PURIFICATION, subclass 14, Filters, Rotary bed.

37. STUFF WORKING, STUFF CHESTS. Vessels generally supplied with agitators, for holding the finished pulp until it is fed to the machine or mold. This subclass has no structural characteristics that limit the apparatus to paper making, and unless the invention is described as designed for this art the patent should be excluded.

Search Classes—

91—COATING, subclass 57, Mixers and stirrers, and the classes mentioned thereunder, when the apparatus is described as adapted for general analogous purposes.

31—DAIRY, subclasses 22, Cheese-vats and curd breakers; the various subclasses of "Churns," especially 42, Churns, Rotary, Vertical single dasher, and 86, Milk cans, Creaming, Agitators.

34—DRIERS, subclass 43, Stirrers.

62—REFRIGERATION, subclass 4, Ice cream freezers.

75—METALLURGY, subclass 86, Solution and precipitation apparatus.

83—MILLS, subclass 11, Grinding mills, Rotary beaters.

87—OILS, FATS, AND GLUE, subclass 16, Soap manufacture.

94—PAVING, subclass 9, Mixers.

195—ALCOHOL, subclass 25, Mashing, Apparatus, and the subclasses thereunder.

196—MINERAL OILS, subclass 4, Apparatus, Stills, Stirrers and scrapers.

38. WEB FORMING. Inventions for forming pulp into a continuous sheet or web, and contains all inventions for handling the web while in the moist formative stage which have not been specially excluded.

Search Classes—

92—PAPER MAKING AND FIBER LIBERATION, the "special work machines" of the "Web forming" group, if the invention involves a special independent treatment of the web while drying for preparing a modified product; subclass 68, Finishing, and classes noted thereunder, if the material to be acted upon is merely moist paper, which may or may not be in the process of formation.

34—DRIERS, for apparatus for merely drying paper; also in 34, for the breaking up of webs of green pulp into flakes or particles and the drying of the same.

100—PRESSES, subclasses 35, Expressing, Belt; 36, Expressing, Belt and plunger, and 37, Expressing, Belt and roller.

193—CONVEYERS, subclass 23, Endless belt guides, for guides for endless aprons, felts and the like, whether for paper making machines or other purposes.

Of appropriate fabric making for wire and felt aprons of peculiar weave or structure.

39. WEB FORMING, SPECIAL WORK. Inventions particularly relating to the formation of a web having special or peculiar features.

Search Classes—

92—PAPER MAKING AND FIBER LIBERATION, subclasses of "Special stock" of the "Stock treatment" group, if the novelty resides merely in the paper stock. Webs built up of multiple continuous layers of pulp are classified here; subclass 21, Stuff working, Special material incorporating, if in mixing foreign matter with the stock prior to the web forming stage.

54—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, if the web is formed of multiple layers of finished paper.

CLASS 92—Continued.

40. WEB FORMING, SPECIAL WORK, SPECIAL MATERIAL INCORPORATING. The art of introducing materials other than paper stock into the pulp while the web is being formed.

Search Class—

92—PAPER MAKING AND FIBER LIBERATION, the subclasses of "Special work," for the building up of webs containing a plurality of layers of various kinds of colors of pulp, with or without adhesives, or in any other way mixing different pulps in the web forming machine; subclasses 21, Stuff working, Special material incorporating, and 55, Pulp molding, Special material and object incorporating, which are parallel with these.

41. WEB FORMING, SPECIAL WORK, SPECIAL MATERIAL INCORPORATING, CYLINDER MACHINES. Inventions involving special material incorporating by the aid of cylinder type machines.

Search Class—

92—PAPER MAKING AND FIBER LIBERATION, subclasses 42, Web forming, Special work, Cylinder machines, and 43, Web forming, Cylinder machines, for cylinder machines.

42. WEB FORMING, SPECIAL WORK, CYLINDER MACHINES. Special work machines wherein the special web is formed by the cylinder type machine.

Search Class—

92—PAPER MAKING AND FIBER LIBERATION, subclasses 41, Web forming, Special work, Special material incorporating, Cylinder machines, and 43, Web forming, Cylinder machines.

43. WEB FORMING, CYLINDER MACHINES. Web forming machines having a rotating cylindrical screen adapted to be partially immersed in a vat of pulp. In operation a thin layer of pulp accumulates on the cylindrical surface and is constantly removed by some means and carried away in a continuous web. Machines of this type are classified here even when the web taken up is not made at once into paper, but is collected as drained pulp for future use.

Search Classes—

92—PAPER MAKING AND FIBER LIBERATION, subclasses 41, Web forming, Special work, Special material incorporating, Cylinder machines; 42, Web forming, Special work, Cylinder machines, and 53, Web forming, Suction boxes, Traveling face, Cylindrical.

210—WATER PURIFICATION, for save-alls and devices for collecting the scattered fibers and materials from waste water, unless combined with a paper making machine, even though comprising a cylindrical screen.

44. WEB FORMING, FOURDRINIER MACHINES. Machines having a substantially horizontal endless traveling screen or apron, on one end of which the pulp may be constantly deposited, through which most of the water escapes, the resulting layer or web being continuously removed and carried away from the other end of the apron.

Search Class—

92—PAPER MAKING AND FIBER LIBERATION, subclass 45, Web forming, Fourdrinier machines, Shake frames, for general structure of this type.

45. WEB FORMING, FOURDRINIER MACHINES, SHAKE FRAMES. Machine structures of the Fourdrinier type in which the invention in some way effects or involves mechanism for imparting a shaking motion to the traveling apron.

Search Class—

92—PAPER MAKING AND FIBER LIBERATION, subclass 33, Stuff working, Strainers, Flat screen, Shaking, and the search notes thereof, for general shaking mechanism.

46. WEB FORMING, FEED REGULATORS. Devices which control or regulate the feeding of the pulp to the machine.

Search Classes—

50—FLUID PRESSURE REGULATORS; 73, MEASURING INSTRUMENTS, especially the subclasses of "Liquid measurers" and of "Weighers;" 137, WATER DISTRIBUTION, especially subclass 62, Tanks, Automatic, and 158, LIQUID AND GASEOUS FUEL BURNERS, the subclasses of "Liquid fuel feeding," for general liquid supply regulating devices.

47. WEB FORMING, COUCH ROLLS. Web forming apparatus comprising rolls which bear upon the pulp web while it is still upon the forming wire to assist in laying the fiber and expressing the water. They are also sometimes employed to assist in transferring the web to the press felt, and in cylinder machines the felt often runs over the couch rolls and is thereby pressed against the forming wire cylinder. This subclass includes couch roll attachments.

48. WEB FORMING, DANDY ROLLS AND WATER MARKING DEVICES. Rolls having open-work peripheries, generally of wire, which bear upon the pulp web while on the forming wire and imprint a more or less distinct surface pattern. These rolls may carry designs also for forming water marks in the web. Includes attachments for dandy rolls and also other devices for water marking purposes when the operation occurs while the web is in the formative stage.

Search Class—

92—PAPER MAKING AND FIBER LIBERATION, subclass 43, Web forming, Cylinder machines, for skeleton roll structure.

49. WEB FORMING, PRESS ROLLS AND FELTS. Inventions relating to the rolls and felts employed in pressing the moisture out of the web after it has left the forming wire.

CLASS 92—Continued.

Search Classes—

- 92—PAPER MAKING AND FIBER LIBERATION, subclass 39, Web forming, Special work, and the subclasses thereunder, for various arrangements of the felts and rolls not involving novel felt or roll structure *per se*.
 65—LAUNDRY, subclass 33, Wringer rolls.
 101—PRINTING, subclasses 76, Inking apparatus, Rollers, and 77, Inking apparatus, Rollers, Composition.
 50. WEB FORMING, FELT AND WIRE CLEANERS. Attachments for cleaning the press felts and forming wires.
 Search Classes—
 92—PAPER MAKING AND FIBER LIBERATION, subclass 76, Finishing, Calenders, Damping devices.
 210—WATER PURIFICATION, subclass 14, Filters, Rotary bed.

51. WEB FORMING, SUCTION BOXES. Devices placed below the forming wire wherein a partial vacuum may be produced to assist in drawing the water out of the pulp web.
 52. WEB FORMING, SUCTION BOXES, TRAVELING FACE. Suction boxes whereof the face of the box against which the wire bears is designed to travel with the wire.
 53. WEB FORMING, SUCTION BOXES, TRAVELING FACE, CYLINDRICAL. Suction boxes whereof the face is a cylinder which revolves as the wire passes over it. In many instances the entire box rotates. Are not to be confused with small rotary antifriction rollers which are carried by a box having a stationary face.

Search Class—

- 92—PAPER MAKING AND FIBER LIBERATION, subclass 43, Web forming, Cylinder machines.
 54. PULP MOLDING. The formation of all articles from paper pulp excepting continuous webs. If, however, the first step involves the formation of a film not of the endless type, the invention is included in this group.
 The modification of molding devices so that heat may be applied is within the scope of this group.
 Pulp molding is in the nature of a subordinate or more limited division of plastic molding, the difference being due to the fact that the pulp such as employed in this art contains an excess of water, which must be expressed or allowed to escape, thereby necessitating that the molds be perforated.
 Search Classes—
 92—PAPER MAKING AND FIBER LIBERATION, "Web forming, Special work" subclasses, for inventions wherein the first step in molding the article involves the formation of a pulp web.
 18—PLASTICS, should be considered for molding operations.
 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 41, Block molding machines; 42, Block molding machines, Flat tile, and 43, Block molding machines, Roofing tile, for molding apparatus generally.
 107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 8, Molding apparatus, and the subclasses thereunder.
 207—PLASTIC METAL WORKING.

55. PULP MOLDING, SPECIAL MATERIAL AND OBJECT INCORPORATING. Pulp molding involving the incorporation of material other than paper pulp generally of bodies of some size. Is similar to the "Special material incorporating" subclasses of the two preceding groups.
 56. PULP MOLDING, COMBINED SUBMERGING AND COMPRESSING. Pulp molding inventions involving submerging the mold and compressing the pulp covering deposited thereon.

Search Class—

- 92—PAPER MAKING AND FIBER LIBERATION, subclasses 57, Pulp molding, Submerged mold, and 59, Pulp molding, Compressors.
 57. PULP MOLDING, SUBMERGED MOLD. Inventions in the practice of which a foraminous mold is submerged wholly or in part in a vat of pulp or is inserted in a wall of the vat. Pulp is then deposited upon the mold by forcing or permitting the water to escape through the perforations.
 Search Classes—
 92—PAPER MAKING AND FIBER LIBERATION, subclass 56, Pulp molding, Combined submerging and compressing.
 75—METALLURGY, subclass 86, Solution and precipitation, Apparatus, for devices with somewhat similar structure.
 58. PULP MOLDING, CENTRIFUGAL ACTION. Inventions in the practice of which the pulp is placed within a foraminous vessel and deposited upon the inner wall by centrifugal action due to the rapid rotation of the vessel.
 Search Classes—
 22—METAL FOUNDRY, subclass 65, Casting apparatus, Centrifugal, for general machine structure.
 91—COATING, subclass 42, Machines, Centrifugal.
 127—SUGAR AND SALT, subclass 3, Centrifugal machines, when it is not intended to form an article, but merely to drain the water out of the pulp.

59. PULP MOLDING, COMPRESSORS. Devices for forming articles by pressing the pulp between opposed surfaces provided with escape passages for the water.

Search Classes—

- 18—PLASTICS, for pressing slightly moist paper sheets into articles where it is unnecessary to express water.
 22—METAL FOUNDRY, subclass 57, Casting apparatus; 49, GLASS, subclasses 35, Molding, Presses, and the subclasses thereunder; and 72, Molds, Pressing, and the subclasses thereunder; 100, PRESSES, subclasses under "Expressing;" 107, BREAD, PASTRY, AND CONFECTION MAKING, subclass 15, Mold-

CLASS 92—Continued.

ing apparatus, Presses, and the subclasses thereunder; 113, SHEET METAL WARE, MAKING, subclass 38, Die shaping, and the subclasses thereunder; 131, MATRIX MAKING; 201, METAL ORNAMENTING, subclass 3, Die expressing, and the subclasses thereunder; 223, APPAREL APPARATUS, subclass 31, Hat machines, Shapers, for similar machine structure.

60. PULP MOLDING, COMPRESSORS, ELASTIC DIAPHRAGM. Pulp molding compressors having a diaphragm composed of elastic material to press the pulp upon the form or to assist in the operation.
 61. PULP MOLDING, COMPRESSORS, SHEET AND BOARD FORMING. Pulp molding compressors for pressing pulp into substantially flat sheets or boards either in form for final use or as cakes or slabs of stock to be employed in subsequent operations. A design may be imprinted on the surface; but the formation of receptacles and articles of peculiar or irregular shape is not included here.

Search Classes—

- 92—PAPER MAKING AND FIBER LIBERATION, subclass 67, Pulp molding, Winders, Sheet and board forming, for like articles formed by winding.
 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, for analogous invention.
 62. PULP MOLDING, COMPRESSORS, CONTRACTIBLE MATRIX. Pulp molding compressors having an external former which surrounds the pulp and is contracted or reduced to compress it. This type should not be confused with that having an elastic diaphragm which may contract upon a form, but does not have a forming face. Nor does this subclass include separable matrices which may be opened after the article is formed, but do not impart positive compression.

Search Classes—

- 10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 15, Bolt and rivet making, Reciprocating die and header; 49, Nail making, Wire nails, Reciprocating die and header, and 57, Nail making, Wrought Nails, Spikes, Reciprocating die and header; 25, PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 101, Block presses, Expanding mold, and 113, SHEET METAL WARE, MAKING, subclass 48, Die shaping, Expanding die, for analogous machine structure.

63. PULP MOLDING, COMPRESSORS, CONTRACTIBLE MATRIX, PISTON CLOSING. Pulp molding compressors having contractible matrices wherein the elements of the matrix are contracted by fluid pressure pistons directly connected to the same. This does not include patents having other mechanism for closing the matrix, which is in turn actuated by piston.

64. PULP MOLDING, COMPRESSORS, CONTRACTIBLE MATRIX, TOGGLE CLOSING. Pulp molding compressors having contractible matrices wherein toggles are employed for closing the elements of the matrix.

Search Class—

- 10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 16, Bolt and rivet making, Reciprocating die and header, Toggle closing dies; 50, Nail making, Wire nails, Reciprocating die and header, Toggle closing dies, for similar mechanism.

65. PULP MOLDING, COMPRESSORS, CONTRACTIBLE MATRIX, WEDGE CLOSING. Pulp molding compressors having contractible matrices wherein the matrix is contracted by means of wedges, cam slots, or similar devices.

Search Class—

- 10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 17, Bolt and rivet making, Reciprocating die and header, Wedge closing dies, and 51, Nail making, Wire nails, Reciprocating die and header, Wedge closing dies, for wedge closing dies.

66. PULP MOLDING, WINDERS. Inventions for molding articles by winding a thin sheet of pulp upon a form until sufficient thickness is obtained. The sheet may be produced by one of the operations of the preceding group of web forming or if not of the endless type by an operation falling within one of the subclasses of this group.

Search Class—

- 242—WINDING AND REELING, for contractible mandrels for winding generally.

67. PULP MOLDING, WINDERS, SHEET AND BOARD FORMING. Pulp molding winders wherein the continuous web is wound upon a cylinder until of sufficient thickness. It is then severed longitudinally and laid open to form a flat board or sheet.

Search Classes—

- 92—PAPER MAKING AND FIBER LIBERATION, subclass 61, Pulp molding, Compressors, Sheet and board forming, for like articles formed by presses.
 154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 35, Fabric coating and uniting, where finished paper is coated with an adhesive and wound up to form a board, for similar machines.

68. FINISHING. Operations performed upon the paper after it has taken form and dried or which it is not essential should take place before this stage and which are not elsewhere provided for.

Search Classes—

- 8—BLEACHING AND DYEING, for coloring with dyes, parchmenizing, and other fluid and chemical treatments.
 11—BOOKBINDING, for operations for preparing negotiable paper so as to prevent fraudulent alterations.

CLASS 92—Continued.

- 41—ORNAMENTATION, for ornamenting with designs and patterns.
- 91—COATING, for coating or loading paper when not occurring during the manufacture.
- 93—PAPER MANUFACTURES, for the manufacture of articles from finished paper.
- 101—PRINTING, for embossing machines.
- 154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, for preparing laminated stock.
- 164—CUTTING AND PUNCHING SHEETS AND BARS, for the cutting of paper.
- 242—WINDING AND REELING, for the winding of paper.
69. FINISHING, WRINKLING. Inventions for imparting to paper irregular wrinkles and various similar distortions, usually of the crape paper type.
- Search Class—**
- 154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 30, Yielding fabric making, Corrugating and indenting, for producing definite corrugations, plaits, and indentations, usually in heavy paper or like fabric.
70. FINISHING, FLEXIBILITY IMPARTING. Operations which prepare the paper so that it may be more readily bent without breaking. Does not include coating or impregnating with a softening fluid.
71. FINISHING, CALENDERS. Devices adapted to impart a polished and smooth surface to paper. Includes calenders equally well adapted for cloth or paper.
- Search Classes—**
- 26—CLOTH FINISHING, subclass 11, Calendering, for machines which are designed for calendering cloth exclusively; subclass 2, Finishing.
- 68—LAUNDRY, subclass 9, Ironing machines; 13, Mangles, and 32, Wringers.
- 95—PHOTOGRAPHY, subclasses 104, Burnishing; 105, Burnishing, Rotary machines, and 106, Burnishing, Rotary machines, Internally heated.
72. FINISHING, CALENDERS, RECIPROCATING POLISHER. Calenders having a reciprocating polisher and an opposed surface between which the paper is to be passed.

CLASS 92—Continued.

- Search Classes—**
- Noted in subclass 71, Finishing, Calenders, herein.
- 149—HIDES, SKINS, AND LEATHER, subclasses 17, Apparatus, Reciprocating tools, and 18, Apparatus, Reciprocating tools, Rocking frames.
73. FINISHING, CALENDERS, STACKED ROLLS TYPE. Calenders comprising three or more rolls mounted in a vertical tier or stack. General structure of this type also extends through the two following subclasses.
- Search Class—**
- 80—METAL ROLLING, subclass 39, Mills, Three-high, for stacked roll arrangement.
74. FINISHING, CALENDERS, STACKED ROLLS TYPE, DOCTORS AND GUIDES. Calenders of the stacked rolls type provided with devices for guiding paper around and through the rolls and for keeping the rolls free and clean.
- Note.—Doctors and guides adapted for use with this type are cross-referenced here from other calender subclasses.
75. FINISHING, CALENDERS, STACKED ROLLS TYPE, PRESSURE REGULATORS. Inventions involving means for regulating or releasing pressure in the stack of rolls.
76. FINISHING, CALENDERS, DAMPING DEVICES. Devices to be employed in connection with calenders for applying moisture to the paper operated upon.
- Search Classes—**
- 92—PAPER MAKING AND FIBER LIBERATION, subclass 50, Web forming, Felt and wire cleaners.
- 26—CLOTH FINISHING, subclass 7, Sponging.
- 101—PRINTING, subclasses 180, Planographic machines, Damping; 96, Paper damping machines, and 97, Paper damping machines, Winders.
- 137—WATER DISTRIBUTION, subclass 80, Sprayers, and the subclasses thereunder.
77. FINISHING, CALENDERS, ROLL. Limited to the structure of the calender roll *per se*.

CLASS 93.—PAPER MANUFACTURES.

DEFINITIONS.

Class.

Machines for working up previously-made paper into articles of commerce, except those which make the article from dry paper by means of drawing-dies, which are classified in class 113, SHEET-METAL WARE, MAKING, VESSELS, DIE-SHAPING, and those which mold the article from moist paper or in heated dies, which are classified in class 18, PLASTICS.

Note.—Wood veneer, cloth, and similar flexible materials when handled in the same manner as paper to form specific articles are, for the purposes of classification, regarded as paper, and machines for working such materials to make specific articles are classified in paper manufactures, subject to the exceptions stated in the above general definition. Compound webs and sheets of paper are not regarded as specific articles, and patents relating to the formation of such webs and sheets are classified in class 92, PAPER-MAKING AND FIBER LIBERATION and in class 154, LAMINATED SHEETS AND ANALOGOUS MANUFACTURES.

Subclasses.

1. MISCELLANEOUS. Means for working paper into articles and parts and adjuncts of such machines and appliances which are not otherwise classified.

2. WRAPPING-MACHINES, MISCELLANEOUS. Machines for applying wrappers to articles of commerce and parts and adjuncts of such machines which are not classified under more specific titles.

Note.—Machines for wrapping newspapers are classified in class 101, PRINTING, subclass 46, Folders, Newspaper-Wrapping Machines.

3. WRAPPING-MACHINES, RECEPTACLE MAKING AND FILLING. Machines which make a paper receptacle and fill the same with loose material.

Search Classes—

- 73—MEASURING INSTRUMENTS, subclass 38, Sack scales.
- 86—ARMS, PROJECTILES, AND EXPLOSIVE CHARGES, MAKING, subclass 23, Ammunition-Loading and machines thereunder.
- 127—SUGAR AND SALT, subclass 6, Cube sugar.
- 128—SURGERY, subclass 32, Capsule machines.
- 226—PACKAGING LIQUIDS, subclass 9, Filling machines, for filling apparatus.

4. WRAPPING-MACHINES, PACKET MAKING AND WRAPPING. Machines which form a packet or cake of fibrous or other loose material and inclose the same in a paper covering.

5. WRAPPING-MACHINES, CRIMPERS AND TWISTERS. Machines which apply paper wrappers to articles of commerce by crimping or twisting the sheet about the article. These machines are usually designed to wrap oranges and other fruit, but are not confined to fruit-wrapping.

6. WRAPPING-MACHINES, RECEPTACLE FILLING AND CLOSING. Machines which fill a previously-made paper receptacle and thereafter close the same.

Search Classes—

- 73—MEASURING INSTRUMENTS, subclass 38, Sack scales.
- 86—ARMS, PROJECTILES AND EXPLOSIVE CHARGES, MAKING, subclass 23, Ammunition-Loading and the subclasses thereunder.
- 127—SUGAR AND SALT, subclass 6, Cube sugar.
- 128—SURGERY, subclass 32, Capsule machines.
- 144—WOOD-WORKING, subclass 61, Match making, Box filling, for filling boxes without closing.
- 226—PACKAGING LIQUIDS, subclass 9, Filling machines for filling apparatus.

7. WRAPPING-MACHINES, TRAVELING-CARRIER. Machines which employ a traveling carrier to convey the objects being operated on from place to place, where the several manipulations involved in the wrapping are performed.

Search Class—

- 93—PAPER MANUFACTURES, subclasses 11, Bag-machines, Plate-mandrel; 12, Rectangular-mandrel; and 44, Box-machines, Endless-mandrel carrier.

8. BAG-MACHINES, MISCELLANEOUS. Machines for making paper bags and parts and adjuncts of such machines which are not classified under more specific titles.

9. BAG-MACHINES, TRIANGULAR-FOLD, BLADE-AND-ROLLER. Machines for making triangular or cone-shaped bags, the bags being formed by driving the material between rollers by means of a folding-blade.

10. BAG-MACHINES, TRIANGULAR-FOLD, MANDREL. Machines for making triangular or cone-shaped bags, the bags being formed by folding the material around a triangular or cone-shaped mandrel.

CLASS 93—Continued.

11. BAG-MACHINES, PLATE-MANDREL. Machines which form bags by folding the material around a plate or flat mandrel.

12. BAG-MACHINES, RECTANGULAR-MANDREL. Machines which form bags by folding the material around a rectangular mandrel.

Search Class—

- 93—PAPER MANUFACTURES, subclasses 44, Box-machines, Endless-mandrel carrier, and 7, Wrapping-machines, Traveling-carrier.

13. BAG-MACHINES, CENTRAL-FOLD. Machines which form bags by folding the material transversely on a line about equally distant from the sides or ends of the blank and securing the edges together.

Search Class—

- 93—PAPER MANUFACTURES, subclasses 62, Envelop-machines, Rotary, Blank-supply, and 63, Rotary, Web-supply.

14. BAG-MACHINES, WEB-FORMERS, CUTTERS, OPENERS AND CLOSERS. Machines which fold and paste a web of paper longitudinally to form a tube, cut the tube into bag lengths, open into some form one end of each length as a preliminary step in the formation of the bottom, and close the opened formation to complete the bag.

Note.—When the opening of the tube is effected by devices carried by rolls or by contrivances operating on the edges of the tube, the patents are classified in subclasses 15 and 16 of this class according to the opening mechanism.

15. BAG-MACHINES, WEB-FORMERS, CUTTERS, OPENERS AND CLOSERS, OPENERS, ROLL. Machines which fold and paste a web of paper longitudinally to form a tube, cut the tube into bag lengths, open into some form one end of each length by means of openers carried by rolls as a preliminary step in the formation of the bottom, and close the opened formation to complete the bag.

16. BAG-MACHINES, WEB-FORMERS, CUTTERS, OPENERS AND CLOSERS, OPENERS, SIDE. Machines which fold and paste a web of paper longitudinally to form a tube, cut the tube into bag lengths, open into some form one end of each length by means of openers operating on the edges of the bag length as a preliminary step in the formation of the bottom, and close the opened formation to complete the bag.

17. BAG-MACHINES, WEB-FORMERS, CUTTERS AND OPENERS. Machines which fold and paste a web of paper longitudinally to form a tube, cut the tube into bag lengths, and open into some form one end of each length as a preliminary step in the formation of the bottom, the opened formation being afterward closed by hand or by independent mechanism to complete the bag.

18. BAG-MACHINES, WEB-FORMERS, CUTTERS AND CLOSERS. Machines which fold and paste a web of paper longitudinally to form a tube, cut the tube into bag lengths, and fold one end of each length back upon itself to close the same and complete the bag.

19. BAG-MACHINES, WEB FORMERS AND CUTTERS. Machines which fold and paste a web of paper longitudinally to form a tube and cut the tube into bag lengths, the remaining operations necessary to complete the bag being afterward performed by hand or by independent mechanism.

20. BAG-MACHINES, WEB-FORMERS. Machines which fold and paste a web of paper longitudinally to form a tube, the remaining operations necessary to complete the bag being afterward performed by hand or by independent mechanism.

Search Classes—

- 93—PAPER MANUFACTURES, subclasses 48, Box-machines, Folding, Web-supply, Stationary folders, and 52, Folding, Stationary folders, and 82 Tube-machines, Axial-feed.
- 131—TOBACCO, subclass 43, Cigar-machines, Endwise-moving filler.

21. BAG-MACHINES, CUTTERS, OPENERS AND CLOSERS. Machines which cut a previously-made tube into bag lengths, open into some form one end of each length as a preliminary step in the formation of the bottom, and close the opened formation to complete the bag.

22. BAG-MACHINES, OPENERS AND CLOSERS. Machines which open into some form one end of previously-made bag lengths as a preliminary step in the formation of the bottom and close the opened formation to complete the bag.

Note.—When the opening of the tube is effected by devices carried on rolls or by contrivances operating on the edges of the tube, the patents are classified in subclasses 23 and 24 of this class according to the opening mechanism.

CLASS 93—Continued.

23. **BAG-MACHINES, OPENERS AND CLOSERS, OPENERS, ROLL.** Machines which open into some form one end of previously-made bag lengths by means of openers carried by rolls as a preliminary step in the formation of the bottom and close the opened formation to complete the bag.
24. **BAG-MACHINES, OPENERS AND CLOSERS, OPENERS, SIDE.** Machines which open into some form one end of previously-made bag lengths by means of openers operating on the edges of the bag lengths and close the opened formation to complete the bag.
25. **BAG-MACHINES, CUTTERS AND OPENERS.** Machines which cut previously-made tubes into bag lengths and open into some form one end of each lengths as a preliminary step in the formation of the bottom, the opened formation being afterward closed by hand or by independent mechanism to complete the bag.
26. **BAG-MACHINES, CUTTERS AND CLOSERS.** Machines which cut previously-made tubes into bag lengths and fold one end of each length back upon itself to complete the bag.
27. **BAG-MACHINES, CLOSERS.** Machines which close previously-prepared bag lengths to complete the bag.
Note.—These machines are usually in the nature of attachments to bag-machines, but in some instances are complete machines to which the incomplete bags are fed.
28. **BAG-MACHINES, OPENERS.** Machines which open into some form one end of previously-made bag lengths as a preliminary step in the formation of the bottom, the opened formation being afterward closed by hand or by independent mechanism.
Note.—When the opening of the tube is effected by devices carried by rolls or by contrivances operating on the edges of the tube, the patents are classified in subclasses 29 and 30 of this class according to the opening mechanism.
29. **BAG-MACHINES, OPENERS, ROLL.** Machines which open into some form one end of previously-made bag lengths by means of openers carried by rolls as a preliminary step in the formation of the bottom, the opened formation being afterward closed by hand or by independent mechanism to complete the bag.
30. **BAG-MACHINES, OPENERS, SIDE.** Machines which open into some form one end of previously-made bag lengths by means of openers operating on the edges of the bag lengths as a preliminary step in the formation of the bottom, the opened formation being afterward closed by hand or by independent mechanism to complete the bag.
31. **BAG-MACHINES, HAND BOTTOM-FOLDERS, TABLES.** Work-tables designed to hold previously-made bag lengths or tubes while the bottoms are formed thereon by hand.
32. **BAG-MACHINES, REFOLDERS.** Machines for operating upon previously-made bags to change the formation or configuration of the same.
33. **BAG-MACHINES, CUTTING.** Cutting-machines and parts and adjuncts of such machines which are specially applicable for use in the manufacture of bags and which are not of general application.
Note.—To complete the search for cutters designed for use in connection with bag-machines, all subclasses in bag-machines which include "cutters" in the title should be examined.
Search Class—
93—PAPER MANUFACTURES, subclasses 8, Bag-machines, Miscellaneous; 9, Triangular-fold, Blade-and-roller; 10, Triangular-fold, Mandrel; 11 Plate-mandrel; 12 Rectangular mandrel; 13 Central-fold.
34. **BAG-MACHINES, PRINTING ATTACHMENTS.** Printing machines, attachments, and appliances which are specially applicable for use in conjunction with paper-bag machines and which are not of general application.
35. **BAG-MACHINES, METHODS.** Methods of making paper bags wherein the steps follow the operation of the machine, and an examination of the machine class is necessary to complete the search for the method.
36. **BOX-MACHINES, MISCELLANEOUS.** Machines for making paper boxes and parts and adjuncts of such machines which are not classified under more specific titles.
37. **BOX-MACHINES, CELL-CASES.** Machines for making boxes or cases having a plurality of compartments or cells, such as egg-cases, except such as are classified under more specific titles.
38. **BOX - MACHINES, CELL - CASES, TRAVELING - CARRIER, SHIFTING-FORM.** Machines for making boxes or cases having a plurality of compartments or cells, such as egg-cases, which are provided with a plurality of shifting forms arranged on a traveling carrier.
39. **BOX-MACHINES, FOLDING AND SETTING UP.** Machines which fold one blank to form an incomplete box and afterward set thereon or attach thereto other blanks to complete the box.
Search Class—
93—PAPER MANUFACTURES, subclass 44, Box-machines, Endless-mandrel carrier.

CLASS 93—Continued.

40. **BOX-MACHINES, FOLDING AND COVERING.** Machines which fold a box-blank into shape and afterward apply ornamental covering-paper to the folded box.
Search Class—
93—PAPER MANUFACTURES, subclass 44, Box-machines, Endless-mandrel carrier.
41. **BOX-MACHINES, FOLDING AND STAYING.** Machines which fold a box-blank into shape and afterward stay the adjoining edges.
Search Class—
93—PAPER MANUFACTURES, subclass 44, Box-machines, Endless-mandrel carrier.
42. **BOX-MACHINES, FOLDING AND STAPLING.** Machines which fold a blank into shape and afterward secure the edges or joints by means of staples.
Note.—Many of the machines make veneer or paper dishes for grocers' use.
Search Classes—
93—PAPER MANUFACTURES, subclass 44, Box machines, Endless-mandrel carrier, and 1, NAILING AND STAPLING, subclasses: 7, Machines, Book, Staple forming and setting; 8, Book, Staple-setting; 11, Machines, Box, Staple forming and setting; 12, Machines, Box, Staple forming and setting, Sheet-metal; 13, Machines, Box, Staple-setting; 2, Machines, Staple forming and setting; 20, Machines, Shoe, Staple forming and setting; and 21, Machines, Shoe, Staple-setting.
43. **BOX-MACHINES, SETTING UP AND COVERING.** Machines which make boxes by setting together two or more independent pieces of material and afterward apply ornamental covering-paper to the folded box.
44. **BOX - MACHINES, ENDLESS - MANDREL CARRIER.** Machines for making paper boxes which employ a plurality of holders, forms, or mandrels mounted on a traveling carrier to hold the blanks while the several manipulations necessary to complete the boxes are performed thereon.
Search Classes—
93—PAPER MANUFACTURES, subclasses 7, Wrapping-machines, Traveling-carrier; 11, Plate-mandrel; 12, Bag-machines, Rectangular-mandrel; 46, Box-machines, Folding, Web-supply, Driers; and 50, Box-machines, Folding, Driers.
113—SHEET METAL WARE MAKING, subclass 7, Can-making machines.
5. **BOX-MACHINES, FOLDING, WEB-SUPPLY.** Machines which cut box-blanks from a continuous web and fold boxes therefrom, except such as are classified under more specific titles.
Search Class—
93—PAPER MANUFACTURES, subclass 44, Box-machines, Endless-mandrel carrier.
46. **BOX-MACHINES, FOLDING, WEB-SUPPLY, DRIERS.** Machines which cut box-blanks from a continuous web and fold boxes therefrom, the machines being provided with driers which dry the boxes during their manufacture or after their completion.
Search Class—
93—PAPER MANUFACTURES, subclass 44, Box-machines, Endless-mandrel carrier.
47. **BOX-MACHINES, FOLDING, WEB-SUPPLY, PLUNGER-AND-DIE.** Machines which cut box-blanks from a continuous web and fold boxes therefrom by means of a plunger and die.
Search Class—
93—PAPER MANUFACTURES, subclasses 44, Box-machines, Endless-mandrel carrier; 46, Box-machines, Folding, Web-supply, Driers; and 50, Box-machines, Folding, Driers.
48. **BOX-MACHINES, FOLDING, WEB-SUPPLY, STATIONARY FOLDERS.** Machines for making folded boxes from a continuous web, the folding operations being performed by means of stationary folders or guides over which the material is drawn. These machines either first fold a web of paper into a tube and then cut the boxes from such folded tube or else cut the blanks from a web and then fold the blanks to complete the box.
Search Classes—
93—PAPER MANUFACTURES, subclasses 62, Envelope-machines, Rotary, Blank-supply; and 63, Web-supply; and 82, Tube-machines, Axial-feed.
131—TOBACCO, subclass 43, Cigar machines, Endwise moving filler.
49. **BOX-MACHINES, FOLDING.** Machines which form boxes by folding into shape previously-prepared blanks and parts and adjuncts of such machines, except such as are classified under more specific titles.
Search Class—
93—PAPER MANUFACTURES, subclass 44, Box-machines, Endless-mandrel carrier.
50. **BOX-MACHINES, FOLDING, DRIERS.** Machines which form boxes by folding into shape previously-prepared blanks and which are provided with means for drying the folded boxes.
Search Class—
93—PAPER MANUFACTURES, subclass 44, Box-machines, Endless-mandrel carrier.

CLASS 93—Continued.

51. **BOX-MACHINES, FOLDING, PLUNGER-AND-DIE.** Machines which form boxes by folding into shape previously-prepared blanks by means of a plunger and die.

Search Class—

93—PAPER MANUFACTURES, subclasses 44, Box-machines, Endless-mandrel carrier; 46, Box-machines, Folding, Web-supply, Driers; and 50, Box-machines, Folding, Driers.

52. **BOX-MACHINES, FOLDING, STATIONARY FOLDERS.** Machines which form boxes by folding into shape previously-prepared blanks by drawing the same over stationary folders or guides.

Search Classes—

93—PAPER MANUFACTURES, subclasses 62, Envelop-machines, Rotary, Blank-supply; 63, Rotary, Web-supply; and 82, Tube-machines, Axial-feed.

131—TOBACCO, subclass 43, Cigar machines, Endwise moving filler.

53. **BOX-MACHINES, REFOLDERS.** Machines for refolding or breaking on alternate edges previously-made boxes of rectangular form or tubes from which such boxes are to be made, so that the finished boxes will be equally flexible at all corners.

54. **BOX-MACHINES, COVERING.** Machines and appliances and parts and adjuncts of such machines and appliances for fixing covering material to boxes otherwise complete.

55. **BOX-MACHINES, SETTING UP.** Machines for setting together independent pieces of previously-prepared material to form boxes.

56. **BOX-MACHINES, STAYING.** Machines for applying strips of paper, cloth, or other material to the corners of paper boxes to secure the parts together or to strengthen the joint when otherwise secured.

Note.—Machines for driving metallic stays into the corners of boxes are found in class 1, NAILING AND STAPLING.

57. **BOX-MACHINES, FLY-AFFIXERS.** Machines for applying an inner fly or flap of ornamental paper to boxes otherwise complete.

58. **BOX-MACHINES, CUTTING AND SCORING.** Machines which cut and score box-blanks and machines which either cut or score such blanks and which are not of general application, but are specially designed for use in the manufacture of paper boxes.

Search Class—

93—PAPER MANUFACTURES, Box-machines, the following subclasses: 36, Miscellaneous; 37, Cell-cases; 38, Cell-cases, traveling-carrier, Shifting-form; 41, Folding and staying; 43, Setting up and covering; 44, Endless-mandrel carrier; 45, Folding, Web-supply; 46, Folding, Web-supply, Driers; 47, Folding, Web-supply, Plunger-and-die; 48, Folding, Web-supply, Stationary folders; 54, Covering; and 56, Staying.

59. **BOX-MACHINES, MANDRELS AND DIES.** Mandrels, dies, and forming-blocks used in the manufacture of paper boxes.

60. **BOX-MACHINES, PLAITING.** Machines which make paper receptacles by plaiting the material from a single sheet or blank.

61. **ENVELOP-MACHINES, MISCELLANEOUS.** Machines for making envelopes and parts and adjuncts of such machines which are not classified under more specific titles.

62. **ENVELOP-MACHINES, ROTARY, BLANK-SUPPLY.** Machines which make envelopes from previously-cut blanks by means of continuously-operating rotary elements which gum and fold the blanks to complete the envelopes.

Search Class—

93—PAPER MANUFACTURES, subclasses 13, Bag-machines, Central-fold, and 63, Envelop-machines, Rotary, Web-supply.

63. **ENVELOP-MACHINES, ROTARY, WEB-SUPPLY.** Machines which make envelopes from a continuous web by means of continuously-operating rotary elements which cut out the blanks and gum and fold the same to complete the envelopes.

Search Class—

93—PAPER MANUFACTURES, subclasses 13, Bag-machines, Central-fold, and 62, Envelop-machines, Rotary, Blank-supply.

64. **ENVELOP-MACHINES, RECIPROCATING, WEB-SUPPLY.** Machines which cut envelop-blanks from a continuous web, gum the same, and fold the blanks by means of reciprocating folding mechanism.

65. **ENVELOP-MACHINES, RECIPROCATING, TURRET.** Machines which gum previously-cut envelop-blanks and fold the same by means of reciprocating folding mechanism, the operating elements being arranged in the form of a turret, so that several blanks may be operated on at the same time.

66. **ENVELOP-MACHINES, RECIPROCATING, GUMMING AND FOLDING.** Machines which gum previously-cut envelop-blanks and fold the same by means of reciprocating folding mechanism.

67. **ENVELOP-MACHINES, RECIPROCATING, FOLDING.** Machines which are confined in their operation to folding previously-cut and gummed envelop-blanks by means of reciprocating folding mechanism and parts and elements of such mechanism.

CLASS 93—Continued.

68. **ENVELOP-MACHINES, RECIPROCATING, GUMMING.** Machines which are confined in their operation to gumming previously-cut envelop-blanks as a step preliminary to the folding operation.

69. **ENVELOP-MACHINES, RECIPROCATING, GUMMING, PICKER-FACES.** Pads or heads for the gumming mechanism of envelop-machines.

70. **ENVELOP-MACHINES, RECIPROCATING, CREASING MECHANISM.** Devices which are confined in their operation to the creasing of envelop-blanks as a step preliminary to the operation of the folding mechanism.

71. **ENVELOP-MACHINES, RECIPROCATING, CARRYING MECHANISM.** Devices which are confined in their operation to the carrying of envelop-blanks from the stack to the creasing or the folding mechanism.

72. **ENVELOP-MACHINES, RECIPROCATING, EJECTING MECHANISM.** Devices which are confined in their operation to discharging or ejecting envelopes from the folding-box into the receiving-box or drying-chain.

73. **ENVELOP-MACHINES, PRINTING AND STAMPING.** Printing and stamping machines, attachments, and appliances which are specially applicable for use in conjunction with envelop-machines and which are not of general application.

74. **ENVELOP-MACHINES, DRYING.** Drying-chains and other drying devices which are specially designed for use in conjunction with envelop-machines.

Search Class—

34—DRIERS, subclass 12, Endless carrier.

75. **ENVELOP-MACHINES, DRYING, CHAIN-DISCHARGING.** Devices which are confined in their operation to discharging or ejecting envelopes from the drying devices into the counting-box or other receptacle.

76. **ENVELOP-MACHINES, THREAD-AFFIXERS.** Devices which are confined in their operation to applying a wire or thread to envelopes as a means for opening the same.

77. **TUBE-MACHINES, MISCELLANEOUS.** Machines for making paper tubes and parts and adjuncts of such machines except such as are classified under more specific titles.

78. **TUBE-MACHINES, FUSE-MAKING.** Machines which make fuses by forming a paper tube and filling the same with firing material.

79. **TUBE-MACHINES, TAPERING-WIND.** Machines for making tapered tubes, usually cigarette holders, by winding a strip of paper over a tapered mandrel.

80. **TUBE-MACHINES, SPIRAL-WIND.** Machines which wind one or more strips of paper spirally over a mandrel to form a tube.

Search Classes—

153—METAL-BENDING, subclass 67, Colling, Traveling Die or Mandrel.

154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 6, Hose making, Axial feed.

81. **TUBE-MACHINES, CONVOLUTE-WIND.** Machines which wind a sheet of paper in a number of convolutions over a mandrel to form a tube.

Search Class—

154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 7, Hose making, Convolute wind.

82. **TUBE-MACHINES, AXIAL-FEED.** Machines which feed a web of paper to a stationary mandrel in line with its axis and fold the same longitudinally to form a tube.

Search Classes—

93—PAPER MANUFACTURES, subclass 43, Box-machines, Folding, web-supply, stationary folders; subclasses 14-20, Bag-machines, Web-formers.

18—PLASTICS, subclass 25, Molding devices, Dipping, Capsule machines.

131—TOBACCO, subclass 43, Cigar machines, Endwise moving filler.

154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 6, Hose making, Axial feed.

83. **TUBE-MACHINES, SIZING AND BURNISHING.** Machines for reducing to uniform size and burnishing previously-made paper tubes.

84. **FOLDING, MISCELLANEOUS.** Machines for making folded paper articles and parts and adjuncts of such machines, except such as are classified under more specific titles.

Search Classes—

93—PAPER MANUFACTURES, subclasses 14-20, Bag-machines, web-formers, and 82, Tube-machines, axial-feed.

101—PRINTING, subclass 44, Folders, Longitudinal.

131—TOBACCO, subclass 43, Cigar machines, Edwise-Moving filler.

223—APPAREL APPARATUS, subclass 15, Folders.

85. **FOLDING, POWDER-PAPER MACHINES.** Machines for making folded powder-papers such as are used by physicians and druggists to inclose medicinal powders.

CLASS 93—Continued.

86. **FOLDING, RADIAL-FOLD.** Machines for making radially-folded sheets of paper, usually filter-paper.
87. **TAG-MACHINES, MISCELLANEOUS.** Machines for making shipping and marking tags and parts and adjuncts of such machines, except such as are classified under more specific titles.

88. **TAG-MACHINES, PIN-TICKET MAKING AND ATTACHING.** Machines for making marking-tags, applying fastening pins or wires to the same, and securing the finished tag to the fabric to be marked.

Search Classes—

93—PAPER MANUFACTURES, subclass 42, Box-machines, Folding and stapling.

1—NAILING AND STAPLING.

218—BUTTON, EYELET, AND RIVET SETTING.

89. **TAG-MACHINES, PIN-TICKET MAKING.** Machines for making marking-tags and for applying fastening pins or wires to the same.

Search Classes—

93—PAPER MANUFACTURES, subclass 42, Box-machines, Folding and stapling.

1—NAILING AND STAPLING.

90. **TAG-MACHINES, EYELETING.** Machines for making marking or shipping tags which are provided with metallic eyelets.

Search Class—

218—BUTTON, EYELET, AND RIVET SETTING, subclasses 25, Implements, Eyeletting; 14, Machines, Eyeletting, and 15, Machines, Eyeletting, Magazine.

CLASS 93—Continued.

91. **TAG-MACHINES, STRING-ATTACHING.** Machines for making marking or shipping tags which are provided with securing strings or wires; also, machines for securing such strings to tags otherwise complete.

Search Classes—

1—NAILING AND STAPLING, subclass 40, Machines, Packet looping.

56—HARVESTERS, subclass 83, Self-binders, Cord knotters.

112—SEWING MACHINES, subclass 24, Special machines.

92. **TAG-MACHINES, WASHER-ATTACHING.** Machines for making marking or shipping tags which have the perforated portions strengthened by washers secured around the opening.

Search Class—

223—APPAREL APPARATUS, subclass 55, Collar, Cuff, and bosom machines.

93. **BUNCHING AND BANDING.** Machines for gathering manufactured paper articles into bunches of a predetermined number and machines for applying a band to such bunches already gathered and machines which both gather such articles and also band the same; mostly machines for counting, bunching, and banding for use with envelop-machines, but also includes machines for collecting and bunching other articles, such as bags, boxes, tags, etc.

94. **TUBES.** Includes paper tubes as articles of manufacture, except such as by reason of their peculiar construction are limited in use to some specific art.

CLASS 95.—PHOTOGRAPHY.**DEFINITIONS.***Class.*

This is a class of machines, articles, and processes peculiar to pictures made by the action of light upon a medium sensitive to it or to the production of these pictures.

Where the invention goes beyond the production of a photograph and includes features belonging to some other art, it is classified with that art. Thus where processes otherwise photographic are adapted specially for or include etching or water-swelling in order to produce an ink-printing surface they are classified in class 41, ORNAMENTATION, subclasses under Surface type, and class 101, PRINTING, subclass, SURFACES, PLANOGRAPHIC, respectively, and so-called "photosculpture" is classified with class 41, ORNAMENTATION, subclass Relief and intaglio.

Inventions relating to mounting, embossing, coloring, or otherwise decorating photographs, but which are suitable also for other pictures, are classified with the corresponding class outside of photography.

Kinetographic cameras are classified with Motion-picture apparatus in class 88, OPTICS, subclass 16, Motion-picture apparatus and subclasses thereunder.

Subclasses.

1. MISCELLANEOUS. Inventions belonging to this class which are not otherwise provided for.
2. COLOR. Inventions peculiar to photography in natural colors.
Note.—Painting or tinting the base or coating of a photograph is not considered a step in color photography unless it is accompanied by a light-selective photographic step, such as exposure through a color-screen.
Note.—Where the invention is equally suited to the production of other colored pictures, it is classified outside this class notwithstanding an indicated photographic use.
3. DAGUERREOTYPY. Inventions relating to that extinct branch of photography known as "daguerreotypy," in which the sensitization and development are secured by the use of vapors.
4. DAGUERREOTYPY, VISES. Clamps for the support of negatives while they are being polished or otherwise treated subsequent to development.
5. PROCESSES. Methods of performing photographic operations except such as are noted below.
Search Class—
95—PHOTOGRAPHY, subclasses 2, Color; 3, Daguerreotypy; 6, Sensitizing and developing; 7, Sensitizing; 73, Printing; 79, Printing, Vignetting; 88, Developing; 101, Retouching; and 104, Burnishing, for the processes pertaining, respectively, to the operations indicated by their titles.
- 5.5 PROCESSES, VITREOUS COLORS. Methods of performing distinctly photographic operations particularly and exclusively adapted for making photographs with vitrifiable colors on ceramics, glass, etc., the firing necessarily forming a step.
6. SENSITIZING AND DEVELOPING. Inventions in the composition of combined sensitizers and developers and in the processes relating to the combined acts of sensitizing and developing.
7. SENSITIZING. Inventions in the composition of the sensitizer and in processes relating thereto.
Search Class—
91—COATING, subclass 69, Photographic film or plate, for processes of applying the sensitive coating to its support.
8. SURFACES. Inventions in the composition or character of the supports upon which light-sensitive coatings are spread and such coatings placed upon these supports for photographic purposes as do not involve the composition of the sensitizer or developer or mere preparation for retouching or burnishing.
Note.—Constructions which go beyond photography to include features in special preparation for use in another art, although involving photographic features, are classified with that art.
Note.—When the composition of the sensitizer or developer or the preparation for retouching or burnishing is involved, the invention is found in this class under the corresponding title.
Search Class—
91—COATING, subclass 69, Photographic film or plate for inventions in the method or apparatus for applying the several coatings.
9. SURFACES, FILMS. Sensitive-film supports of a flexible character. The roll or series of films as an article of manufacture is here classified unless the invention lies in the inclosing case or mounting roller.
Note.—When the composition is not peculiar to photography it is classifiable elsewhere.

CLASS 95.—Continued.

10. ACTINOMETERS. Such devices for measuring the intensity of light as are specially adapted for photographic use.
Search Classes—
88—OPTICS, subclass 23, Photometers, for devices capable of general use.
235—REGISTERS, for Calculators for estimating the size of diaphragm or time of exposure from known facts.
11. CAMERAS. Inventions relating to the construction of the camera or the case, shutter, or plate holder used therewith. Finders and such vignettes as are used in connection with the camera are also here found.
12. CAMERAS, COMBINATION. Combinations of cameras with other devices which do not serve a photographic purpose.
Search Class—
88—OPTICS, subclass 17, Motion-picture apparatus, Picture-strip, for kinetographic cameras capable of use also to exhibit pictures.
13. CAMERAS, DEVELOPING. In combination with the exposure means these cameras embrace also light-excluding cases in which photographic surfaces are subjected to one or more fluid-treating operations, such as sensitizing, developing, etc.
14. CAMERAS, DEVELOPING, AUTOMATIC. The successive operations of developing, etc., are here performed automatically.
Search Class—
104—CHECK-CONTROLLED APPARATUS, where the invention includes check-controlled mechanism for operating the device.
15. CAMERAS, PANORAMIC. Cameras in which the lens is made to rotate or revolve during the exposure in order to increase the angular extent of the view covered by it.
16. CAMERAS, PANORAMIC, CONCAVE-SURFACE. Cameras wherein the sensitized surface is bent into the form of a partial cylinder, and exposure is made upon the inner cylindrical surface.
17. CAMERAS, PANORAMIC, CONVEX-SURFACE. Cameras wherein the sensitized surface is bent into the form of a partial cylinder, and exposure is made upon the outer cylindrical surface.
18. CAMERAS, SIMULTANEOUS-EXPOSURE. Devices by which two or more exposures are made at the same time.
19. CAMERAS, MAGAZINE. Inventions by which two or more sensitized surfaces, herein called "plates," not in the same plane are incased within a camera or light-tight receiver attachable thereto and are brought to the exposure position one at a time without opening the receiver to the light.
Search Class—
95—PHOTOGRAPHY, subclass 66, Cameras, Plate-holders for mere double plate-holders.
Note.—Plates or sections of plates within the same plane which are successively subjected to exposure are classified in this class, subclass 36, Cameras, Successive plate-sections, unless they are roller-mounted, when they are found in subclass 31, Cameras, Roll-holding, in this class.
20. CAMERAS, MAGAZINE, HAND-CHANGED PLATE. A flexible end to the magazine-box or light-guards admitting the hand of the operator to this box permits a change of the plate to be effected by hand guidance of the changing mechanism or by handhold upon the plate.
21. CAMERAS, MAGAZINE, TILTING-MAGAZINE. Cameras in which the change of the plate from storage to exposure position, or vice versa, necessitates tilting or rotating a receiver constituting at least a part of the magazine and itself holding more than one plate in different planes.
Note.—Receivers which are hinged to the camera or to another receiver in order that they may be moved out of the way when not in use, but which can be kept immovable for successive transfers, are not placed here, but are classified according to the method of transfer.
22. CAMERAS, MAGAZINE, FLEXIBLE PLATE-CARRIER. Cameras characterized by flexible means for transferring the plates between the storage and exposure positions.
23. CAMERAS, MAGAZINE, SLIDING-PLATE. In these constructions the transfer of the plate is effected by movement in its own plane.
24. CAMERAS, MAGAZINE, SLIDING-PLATE, SLIDING AND RETURN. Each of the plates in the receivers here included is held in a guide from which it is slid to the exposure position and to which it is afterwards returned.

CLASS 95—Continued.

25. **CAMERAS, MAGAZINE, SLIDING-PLATE, CONTINUOUS GUIDES.** The plates are here supported by guides in which or upon which they slide during their entire movement. There is a separate guide for each plate. Adjustment is made to bring the planes of the several guides successively into focus.
26. **CAMERAS, MAGAZINE, SLIDING-PLATE, INTERMEDIATE EXPOSURE-CHAMBER.** In these sliding-plate constructions an exposure position is provided in a chamber intermediate the two plate receivers.
27. **CAMERAS, MAGAZINE, QUARTER-TURNED PLATE.** These cameras each embody two receivers, the planes of whose plates are perpendicular to each other, and such constructions are involved in exposing the plates or transferring them from one receiver to the other.
- Search Class—**
95—PHOTOGRAPHY, subclass 21, Cameras, Magazine, Tilting-magazine.
28. **CAMERAS, MAGAZINE, QUARTER-TURNED PLATE, TILTING.** Cameras wherein transfer from one receiver to the other is effected by swinging the plate upon an axis in or near one of its edges.
29. **CAMERAS, MAGAZINE, QUARTER-TURNED PLATE, TILTING, BASE GUIDES.** Cameras wherein the plate is guided at its base during movement between its two storage positions.
30. **CAMERAS, MAGAZINE, REAR-PLATE REPLACING.** Magazine cameras wherein the plates are removed from one end or face of a receiver and replaced at the other end or face of the same receiver in a plane parallel to their first positions.
- Note.**—A space does not cease to be one receiver in the sense used in the above definition because it is divided by a partition whose plane is parallel to that of the plates and which moves transversely to this plane.
- Search Class—**
95—PHOTOGRAPHY, subclasses 20, Cameras, Magazine, Hand-changed plate, and 21, Cameras, Magazine, Tilting-magazine.
31. **CAMERAS, ROLL-HOLDING.** Roll-holding devices for cameras whether integral with or detachable from the camera.
- Search Classes—**
95—PHOTOGRAPHY, subclass 15, Cameras, Panoramic and subclasses thereunder.
88—OPTICS, subclass 16, Motion-picture apparatus, Picture-strip.
235—REGISTERS, where the invention lies in registering devices to indicate the number of exposures.
32. **CAMERAS, ROLL-HOLDING, FOLDING.** Roll-holding cameras capable of reduction in size other than such slight reduction as may be necessary for focusing.
33. **CAMERAS, ROLL-HOLDING, FOLDING, HINGED-BELLOWS.** Roll-holding cameras characterized by bellows which are hinged along one edge so as to open in V shape.
34. **CAMERAS, ROLL-HOLDING, POSTERIOR ROLLS.** Roll-holding cameras in which the rolls lie behind the plane upon which exposure is made. Most of the constructions here contained are separable from the camera-body.
35. **ABOLISHED.**
36. **CAMERAS, SUCCESSIVE PLATE-SECTION.** Devices by which exposure is made upon successive portions of the same sensitized surface or successive sensitized surfaces which are mounted in the same plane.
- Search Class—**
95—PHOTOGRAPHY, subclasses 31, Cameras, Roll-holding, and subclasses thereunder for roller-mounted surfaces fed by successive sections into the same exposure plane, 57, Cameras, Shutters, Curtain, and 15, Cameras, Panoramic, and subclasses under the latter for a continuous exposure upon successive sections not always in the same plane, effected by movement of the surface or exposure opening relative to the one to the other.
37. **CAMERAS, SUCCESSIVE PLATE-SECTION, SHIFTING LENS OR PLATE.** Cameras having successive sections brought into exposure position by movement of the lens or plate relative to the one to the other.
38. **CAMERAS, SUCCESSIVE PLATE-SECTION, SHIFTING LENS OR PLATE, ROTARY.** Rotary lenses or plates to effect successive exposures.
39. **CAMERAS, FOLDING.** Cameras having means whereby a reduction is secured in the length of the camera bed or frame.
- Search Class—**
95—PHOTOGRAPHY, subclass 44, Focusing, and subclasses thereunder for such slight adjustments as are involved in focusing.
40. **CAMERAS, FOLDING, HINGED-BASE.** Folding cameras in which the reduction in length is secured by hinging a part of the base, upon which part in use the front or back is extended.
- Search Class—**
95—PHOTOGRAPHY, subclass 32, Cameras, Roll-holding, Folding.

CLASS 95—Continued.

41. **CAMERAS, PLATE-HOLDER STORAGE.** Mere storage-receivers for plate-holders. They may be either integral with the camera or attachable thereto.
- Note.**—Camera "magazines" have means by which one sensitized surface, usually not held in a light-tight plate-holder, can be removed from the exposure position and replaced by another without opening the magazine. Plate-holder-storage receivers differ from these in that they must be opened to effect the change and in that they contain plate-holders which are themselves light-tight.
42. **CAMERAS, EXPOSURE-LENS FINDER.** Structures characterized by reflectors which can be placed in the path of the rays from the main lens in order to direct these rays upon a "finding" or focusing surface. To effect an exposure, the reflector is removed from the path of the light-rays. These finders usually focus also.
43. **CAMERAS, COPYING AND ENLARGING.** Cameras and attachments thereto which are particularly adapted for copying, enlarging, or reducing work, with such arrangements for holding the surface to be copied as do not form part of a camera-support.
- Search Class—**
95—PHOTOGRAPHY, subclass 87, Camera-supports, Copy-holding, for copy-holders which form part of the camera-supports.
44. **CAMERAS, FOCUSING.** Means for securing or indicating the proper distance between the lens and sensitized surface at which the light-rays are focused.
- Search Class—**
95—PHOTOGRAPHY, subclasses 42, Cameras, Exposure-lens finder; and 49, Cameras, Ground glasses and frames, for improvements in the material, construction, or mounting of a ground-glass or other focusing surface.
45. **CAMERAS, FOCUSING, ADJUSTING MECHANISMS.** Mechanisms for forcing the lens or plate-holder carrier of a camera from or toward each other.
46. **CAMERAS, FOCUSING, GUIDES AND LOCKS.** Tracks, in which or upon which the front or back of a camera moves from or toward the other in the act of focusing, and clamps or similar devices to secure these parts in the desired position.
47. **CAMERAS, FOCUSING, HOODS.** Curtains, shades, or covers which reduce the light upon or exclude the light from a focusing-surface in order that the image formed upon it may be more clearly seen.
48. **CAMERAS, REVERSIBLE-BACK.** Means permitting an angular movement of the sensitized surface within its own plane. This is done usually so that the longer dimension of a sensitized surface may correspond at will to either the horizontal or vertical dimension of the object to be photographed.
49. **CAMERAS, GROUND GLASSES AND FRAMES.** Inventions involving the material, construction, or mounting of any focusing-surface and such combinations of the camera or plate-holder therewith as enable this surface and the sensitized surface to be successively brought to the same position relative to the lens.
50. **CAMERAS, SWING FRONT OR BACK.** Means permitting angular adjustment of the front or back of a camera in some other than its own plane.
- Search Class—**
95—PHOTOGRAPHY, subclass 40, Cameras, Folding, Hinged-base.
51. **CAMERAS, SHIFT FRONT OR BACK.** Means permitting adjustment, other than angularly, of the front or back within approximately its own plane.
- Search Class—**
95—PHOTOGRAPHY, subclasses 37, Cameras, Successive plate-section, Shifting lens or plate, and 48, Cameras, Reversible-back, for angular adjustments in the same plane as that of the part moved to alter the angle of the dimensions of the picture relative to those of the plate.
52. **CAMERAS, FINDERS.** Devices independent of the exposure-lens by which the operator can learn the extent and position upon the sensitized surface of the image formed through the exposure-lens.
- Search Class—**
95—PHOTOGRAPHY, subclasses 42, Cameras, Exposure-lens finder, and 44, Cameras, Focusing, for devices showing the distance from the lens at which the sensitized surface must be placed in order to secure a focus.
53. **CAMERAS, SHUTTERS.** Devices for admitting, restricting, or cutting off light from sensitive surfaces.
- Note.**—Shields for cutting off a portion of the image will be found in this class, subclasses 36, Cameras, successive plate-section; 65, Cameras, vignettes, and 79, Printing, vignetting.
- Search Classes—**
95—PHOTOGRAPHY, subclasses 66, Cameras, Plate-holders, and 73, Printing, respectively, for slides and other light-shields used with plate-holders and printing appliances; 81, Screens, for partially transparent mediums interposed to diffuse, alter the character of, or break up the light before it reaches a sensitized surface.
88—OPTICS, subclass 17, Motion-picture apparatus, Picture-strip.
194—CHECK-CONTROLLED APPARATUS, subclass 95, Shutter.

CLASS 95—Continued.

54. CAMERAS, SHUTTERS, FLUID-OPERATING MECHANISMS. Operating mechanisms for moving, releasing, or regulating the time of movement of shutters are classified here when the invention lies in constructions producing motion of a piston or other part by fluid-pressure rather than in connecting parts by which this motion is communicated to the shutter.

55. CAMERAS, SHUTTERS, SLIDING. Shutters having slidable light-excluding parts.

56. CAMERAS, SHUTTERS, SLIDING, OPPOSITE-MOVEMENT. Shutters having two or more light-excluding members slidable in opposite or diverse directions in order to make an exposure.

57. CAMERAS, SHUTTERS, CURTAIN. Shutters wherein the light-excluding members are flexible sheets or curtains provided with openings which pass across the lens-opening or sensitized surface to produce the exposure. They are usually roller-mounted.

58. CAMERAS, SHUTTERS, PIVOTED. Shutters in which the light-excluding members are pivoted.

Search Class—

95—PHOTOGRAPHY, subclass 42, Cameras, Exposure-lens finder.

59. CAMERAS, SHUTTERS, PIVOTED, BLADE. Pivoted shutters characterized by flat light-excluding parts which move in their own planes.

Note.—Flat light-excluding members which move in a plane perpendicular to their own are found in the miscellaneous subclass of pivoted shutters.

60. CAMERAS, SHUTTERS, PIVOTED, BLADE, BLADE AND COVER BLIND. Pivoted shutters of two types—one type auxiliary to pivoted shutter-blades, whether themselves pivoted or not, to vary the opening in the pivoted blade or to cover this or the lens-opening during resetting, and the other type, themselves pivoted, which cover the opening of the main blade or of the lens during resetting.

61. CAMERAS, SHUTTERS, PIVOTED, BLADE, ROTARY. Shutter-blades each having two or more exposure-openings which are rotated past the lens in turn to make successive exposures without changing the direction of rotation.

62. CAMERAS, SHUTTERS, PIVOTED, BLADE, OPPOSITE-MOVEMENT. Shutters having two or more pivoted blades moving in different directions to make or close the opening.

63. CAMERAS, SHUTTERS, PIVOTED, BLADE, OPPOSITE-MOVEMENT, SYMMETRICAL-OPENING. Shutters characterized by pivoted blades which move in diverse directions from or toward a center and form an opening symmetrical at all times.

64. CAMERAS, SHUTTERS, DIAPHRAGMS. Devices which reduce the effective aperture of a lens, either to avoid excessive light or to gain definition. They are usually removable or adjustable.

Note.—Diaphragms are distinguished from other shutters in that the former never entirely cut off the light and are usually not adjusted during exposure.

Note.—Curtains placed either in front of or behind a lens to cut off a portion of the image are found in this class, subclasses 36, Cameras, Successive plate-sections, and 65, Cameras, Vignettes.

Search Class—

95—PHOTOGRAPHY, subclass 63, Cameras, Shutters, Pivoted, Blade, Opposite-Movement, Symmetrical-opening.

65. CAMERAS, VIGNETTERS. Devices adapted for use within the camera or between the camera and the object to be photographed for partially masking the object during the exposure.

Search Class—

95—PHOTOGRAPHY, subclass 79, Printing, Vignetting, for vignetting devices and methods used in photographic printing.

66. CAMERAS, PLATE-HOLDERS. Holders which are separable from a camera, but are intended for the support of sensitized surfaces during their exposure in a camera or to protect these surfaces while they are being transferred to a camera. Here are also placed such supports for finished negatives and screens used within a camera as are separable therefrom.

Note.—Devices which are not merely double plate-holders, but by means of which separate sensitized surfaces or separate portions of the same sensitized surfaces are simultaneously exposed in a camera, are classified in this class, subclass 18, Cameras, Simultaneous-exposure. Where these separate surfaces or portions are successively brought into the same position relative to the lens for exposure, whether they are separable from the camera or not, they are classified, according to the means used, in subclasses 19, Cameras, Magazine; 31, Cameras, Roll-holding, and 36, Cameras, Successive plate-section, of this class and in the subclasses under them.

Note.—Ground-glass combinations with plate-holders and frames attached to the camera as guides within which the plate-holder and ground glass slide are found in this class, subclass 49, Cameras, Ground glasses and frames.

Search Class—

235—REGISTERS, subclass 91, Operating devices, for devices which register the number of times the plate-holder has been opened to indicate the number of prints taken.

CLASS 95—Continued.

67. CAMERAS, PLATE-HOLDERS, LIGHT-SEALS. Movable cut-offs to prevent the admission of light to the plate-holder through openings therein, except such slides or doors as close front or rear openings used to admit the plate or to expose it when in place.

68. CAMERAS, PLATE-HOLDERS, PLATE-FASTENINGS AND KITS. Inventions in the corner-pieces, catches, or other devices which support or retain a sensitized surface within a plate-holder and such open plate or film holding frames ("kits") as are used within a plate-holder or magazine-camera. These all support the sensitized surface during its exposure.

Note.—Adaptations of kits to special types of magazine-cameras are classified with these cameras. Thus, extended bases upon kits occur in this class, subclass 29, Cameras, Magazine, Quarter-turned plate, Tilting, Base-guides.

Note.—Plate or film holding frames used within a plate-holder, but which are themselves light-excluding, are found in this class, subclass 71, Cameras, Plate-holders, Auxiliary.

69. CAMERAS, PLATE-HOLDERS, PLATE-FASTENINGS AND KITS, ADJUSTABLE. Plate-holders wherein the retaining parts are adjustable to fit surfaces of different sizes.

70. CAMERAS, PLATE-HOLDERS, SOLUTION-DRAINS AND RESISTANTS. Modifications of the structure or material of the plate-holders to permit collection of the solutions draining from wet plates or to prevent or withstand the injurious effects of these solutions.

71. CAMERAS, PLATE-HOLDERS, CLOSURE LOCKS AND CHECKS. Devices to retain the slide, door, or other plate-holder closure or prevent reexposure of the sensitized surface.

72. CAMERAS, PLATE-HOLDERS, AUXILIARY. Plate-holders for the purpose of supplying plates or films to and removing the same from "principal" plate-holders in daylight and either do not themselves hold the plate or film during exposure or have independent front closures and are otherwise light-excluding.

Note.—When these auxiliary holders contain more than one plate and are capable of successively supplying these plates to exposure position, the holders become magazines and are classified in this class, subclass 10, Cameras, Magazine, and the subclasses thereunder, unless the device is a mere double plate-holder.

73. PRINTING. Processes or apparatus for printing a sensitized surface by light passing through a negative.

Search Class—

95—PHOTOGRAPHY, subclass 43, Cameras, Copying and enlarging for cameras which enlarge or reduce from a negative.

74. PRINTING, SUPERPOSED NEGATIVE. Such processes and apparatus as use two or more negatives placed one upon another to form a compound printing-negative.

75. PRINTING, CONTINUOUS-FILM. Means for successively printing successive portions of a continuous sensitized surface and for successively printing from successive portions of a continuous negative.

Search Class—

95—PHOTOGRAPHY, subclass 31, Cameras, Roll-holding.

76. PRINTING, FLUID-PRESSURE CONTACT. Printing means in which contact between the surfaces is secured by fluid-pressure.

77. PRINTING, FRAMES. Approximately flat portable devices which hold negatives and sensitized surfaces in their proper relative positions for printing.

Note.—When the invention embodies auxiliary apparatus, such as timing or lighting mechanism, it is elsewhere herein classified.

77.5. PRINTING, FRAMES, CYLINDRICAL. Printing-frames generally used for making blue-prints, wherein the sensitive paper and design to be copied are supported upon a cylindrical surface, usually of glass.

78. PRINTING, STANDS. Devices which support printing-frames or by which the angle at which they are set is adjusted.

Search Class—

211—STORE FURNITURE, subclass 24, Display-stands.

79. PRINTING, VIGNETTING. Means for masking a part of the sensitized surface during the printing operation or for diffusing the light admitted to this surface by a medium placed at such distance or of such a nature as not to imprint its character upon the sensitive surface.

Search Class—

95—PHOTOGRAPHY, subclass 80, Screens, where the color or the character of the interposed medium affects the sensitive surface; subclass 64, Cameras, Vignettes, when the vignetting device is used in making the exposure with a camera.

80. PRINTING, VIGNETTING, FRAME-ATTACHING MECHANISMS. Vignetting mechanisms which are attached to printing-frames and in which the invention includes the character of the attaching means or some modification of the printing-frame to accommodate the vignetter.

CLASS 95—Continued.

81. **SCREENS.** Colored light-selective mediums or lined, blocked, dotted, or stippled screens, whose purpose is the breaking up of an image according to the nature or pattern of the screen. In each case the distinctive characteristic of the screen affects the image formed upon a sensitive surface which is exposed through it. These may be auxiliary to or independent of any backgrounds, negatives, or objects to be directly or reversely copied. Special mounts for these screens are also here placed.

Search Class—

95—PHOTOGRAPHY, subclasses 65, Cameras, Vignettors, and 78, Printing, Vignetting, for light diffusing and masking inventions which do not impress their distinctive characteristics upon the sensitized surface exposed.

82. **STUDIOS.** Studio structures, mechanisms for varying the light upon the subject, and such other requisites of studio operation as are not otherwise classifiable.

Search Classes—

85—OPTICS, subclasses 57.5 et seq., Building-lights, for structures which admit light to buildings without varying its amount.
240—ILLUMINATION, for artificial illumination generally.

83. **BACKGROUNDS.** Devices auxiliary to the main object which is to be photographed and are included in the picture to produce a scenic effect. They differ from models in that the latter inventions relate to the objects whose pictures are sought.

84. **BACKGROUNDS, ROLLING CURTAIN.** Backgrounds mounted upon rollers and adapted to be rolled upon them.

85. **MODELS.** Means for modifying the structure or arrangement of objects which are to be photographed to facilitate the production of a desired effect.

Note.—Backgrounds are distinguished from models in that the former are auxiliary to the objects to be photographed and do not modify them, while the latter relate to the objects themselves.

86. **CAMERA-SUPPORTS.** Structures peculiarly adapted for supporting cameras.

Search Classes—

45—FURNITURE, subclass 31 et seq., Tables, for stands which are mere tables.
88—OPTICS, subclass 61, Tripods.

87. **CAMERA-SUPPORTS, COPY-HOLDING.** Camera-supports, including also holders for the object which is to be copied.

88. **DEVELOPING.** All such operations as fixing, toning, intensifying, reducing, and washing which are performed upon a light-sensitive surface to complete the image or to remove the chemicals used. Includes methods and compositions which have for their object the accomplishment of any of these operations.

Search Class—

95—PHOTOGRAPHY, subclasses 6, Sensitizing and developing; 13, Cameras, Developing, and 14, Cameras, Developing, Automatic.

89. **FLUID-TREATING APPARATUS.** Apparatus for performing or facilitating the operations of sensitizing where this is merely wet-plate dipping, and of afterward fluid-treating photographic surfaces.

Search Classes—

95—PHOTOGRAPHY, subclasses 13, Cameras, Developing, and 14, Cameras, Developing, Automatic.
91—COATING, subclass 69, Photographic film or plate, for apparatus for coating a surface with a sensitized solution other than for wet-plate dipping, as above.

90. **FLUID-TREATING APPARATUS, DARK CABINETS.** Light-excluding cases adapted to hold photographic surfaces while they are being subjected to the processes of dipping for wet-plate sensitization or of development, etc., subsequent to exposure.

Search Classes—

95—PHOTOGRAPHY, subclasses 13, Cameras, Developing, and 14, Cameras, Developing, Automatic; subclass 66, Cameras, plate-holders, where the combination is with a plate-holder independent of the camera structure.

91—COATING, subclass 69, Photographic film or plate, for machines and arrangements for applying sensitive coatings to surfaces other than by mere dipping.

- 90.5. **FLUID-TREATING APPARATUS, DARK CABINETS, ROLL-FILM.** Light-excluding cases, (as described in subclass 90, Fluid-treating apparatus, Dark cabinets,) adapted for treating roll-films.

91. **FLUID-TREATING APPARATUS, DARK CABINETS, HAND-INSERTION.** Dark cabinets adapted to admit the hands and sometimes the entire upper part of the body of the operator through flexible light-guards.

CLASS 95—Continued.

92. **FLUID-TREATING APPARATUS, DARK CABINETS, HAND-INSERTION, VENTILATED.** Hand insertion dark cabinets provided with means of ventilation.

93. **FLUID-TREATING APPARATUS, ROTATING CARRIERS.** Rotatable supports, usually turned by the force of the fluid used, which carry photographic surfaces while they are being treated.

94. **FLUID-TREATING APPARATUS, FILM-GUIDES.** Means by which a flexible band carrying a photographic surface is guided in order that it may be supported or stretched during its treatment by a fluid.

Search Class—

95—PHOTOGRAPHY, subclass 89, Fluid-treating apparatus.

95. **FLUID-TREATING APPARATUS, TRAYS.** Fluid-treating receptacles have relatively low sides, are usually open, and do not exclude light. The surface to be acted upon in some cases forms the bottom of the tray.

96. **FLUID-TREATING APPARATUS, TANKS.** Fluid-treating receptacles have relatively high sides, are usually open, and do not exclude light.

97. **FLUID-TREATING APPARATUS, TANKS, WASHING.** Tanks having provision for the circulation of a fluid for washing or otherwise treating a photographic surface after exposure.

Search Class—

141—WASHING APPARATUS, subclasses 9, Dish-cleaners, and 8, Combined dish cleaners and drainers.

98. **FLUID-TREATING APPARATUS, TANKS, WASHING, PLATE-SUPPORTING.** Washing-tanks provided with means for supporting negatives or other photographic surfaces and such removable racks or stands as are intended to retain these surfaces during the washing operation.

Search Class—

95—PHOTOGRAPHY, subclass 92, Fluid-treating apparatus, rotating carriers when the support is rotatable.

99. **FLUID-TREATING APPARATUS, ROCKING MECHANISMS.** Fluid-treating apparatus wherein the containing vessel or the surface which is being treated is rocked.

100. **FLUID-TREATING APPARATUS, WORK-HANDLING DEVICES.** Devices by which a photographic surface is lifted or stretched during the processes of wet-plate dipping, developing, etc. They are independent of the containing-wheel.

Search Class—

95—PHOTOGRAPHY, subclass 98, Fluid-treating apparatus, Tanks, Washing, Plate-supporting, for racks or stands used as supports within tanks.

101. **RETOUCHING.** Means for improving a photographic surface by adding lines, stipples etc., mechanically and such compounds as prepare the surface to receive the pencil.

Search Classes—

32—DENTISTRY, subclasses 18 Pluggers, Air, and 26 Pluggers, Power-operated.

101—PRINTING, subclass 133, Stencil-making pens for vibratory hand-tools similar to those used in retouching.

102. **RETOUCHING, STANDS.** Supports for the surface which is to be retouched, usually characterized by an open framework which permits illumination of the under side of the surface.

103. **RETOUCHING, STANDS, VIBRATING.** Retouching stands adapted to be given a vibratory motion.

104. **BURNISHING.** Means designed to polish a photographic image by applying to it heat-pressure or friction and such compounds as facilitate these operations.

Search Class—

95—PHOTOGRAPHY, subclass 8, Surfaces, when the polish is secured by drying one surface in contact with another or by the drying of a photographic varnish or enamel.

Note.—Methods and structures similar to these found in this subclass with a like object may be found in class 68, LAUNDRY, subclasses Ironing-machines and mangles; class 92, PAPER-MAKING AND FIBER-LIBERATION, subclasses 71 FINISHING, Calendaring and subclasses thereunder; class 26, CLOTH-FINISHING, subclass 11, Calendaring, and class 12, BOOT AND SHOE MAKING, all burnishing-machines, and burnishing-tool subclasses.

105. **BURNISHING, ROTARY MACHINES.** Burnishing-machines wherein the part which polishes the photographic surface rotates during the act of polishing.

106. **BURNISHING, ROTARY MACHINES, INTERNALLY HEATED.** Burnishing-machines in which a hollow rotary polishing-tool is heated from the inside.

CLASS 102.—AMMUNITION AND EXPLOSIVE DEVICES.**DEFINITIONS.***Class.*

This class includes various kinds of explosive devices comprising gun ammunition, means for blasting, pyrotechnics, and torpedoes. It also includes shapes or mechanical structures of grains, sticks, or bars of explosive substance when arranged for the purpose of modifying the rate or manner of burning or exploding.

Explosive compositions are in class 52, **EXPLOSIVES**. Explosive devices such as torpedoes, peculiar to railway signaling, are in class 246, **RAILWAY SIGNALING**.

Subclasses.

1. **MISCELLANEOUS**. Ammunition and explosive devices not classifiable in any of the other subclasses.

2. **TORPEDOES**. Includes the common self-propelled torpedo those that are hurled from a gun, stationary submarine mines, and those used to break up the earth at the bottoms of oil-wells to increase their flow.

Search Class—

102—AMMUNITION AND EXPLOSIVE DEVICES, subclass 23, Pyrotechnics, Rockets, for self-propelled torpedoes,

3. **TORPEDOES, SUBMARINE MINES**. Torpedoes used under water, usually for harbor and coast defense.

Search Class—

102—AMMUNITION AND EXPLOSIVE DEVICES, subclasses 6, **Blasting, Cartridges**, and 7, **Blasting, Cartridges, Electric**, for the firing devices.

4. **TORPEDOES, WELL**. Torpedoes adapted for use at the bottoms of oil-wells to break up the surrounding earth to increase the flow of oil.

Search Class—

102—AMMUNITION AND EXPLOSIVE DEVICES, subclass 6, **Blasting, Cartridges**.

5. **BLASTING**. Various devices for and methods of blasting coal, stone, timber, etc.

6. **BLASTING, CARTRIDGES**. Blasting charges put up in cartridge form.

Search Class—

102—AMMUNITION AND EXPLOSIVE DEVICES, subclasses 3, **Torpedoes**, **Submarine mines**, and 4, **Torpedoes, Well**.

7. **BLASTING, CARTRIDGES, ELECTRIC**. Blasting cartridges specially devised to be exploded by means of an electric current.

Search Class—

102—AMMUNITION AND EXPLOSIVE DEVICES, subclass 3, **Torpedoes**, **Submarine mines**.

8. **BLASTING, FUSES**. Miners' fuses, matches, and other charge-igniting devices.

9. **BLASTING, FUSES, CAPS**. Igniting-caps to be attached to the blast-fuses.

10. **BLASTING, FUSES, ELECTRIC**. Fuses or charge-igniters adapted to be fired by an electric current.

Search Class—

102—AMMUNITION AND EXPLOSIVE DEVICES, subclasses 19, **Cartridges, Primers, Electric**, and 38, **Projectiles, Shells, Fuses, Electric**.

11. **BLASTING, PLUGS**. Various plugs adapted to be inserted in blast-holes in stone, coal, timber, etc., usually in lieu of the ordinary tamping, to confine the blasting charge.

12. **CARTRIDGES**. Includes the various kinds of gun-cartridges.

13. **CARTRIDGES, ACCELERATING**. Cartridges wherein the charge is constructed or arranged to explode gradually or is in several parts which explode successively with a view to producing an accelerating effect upon the projectile.

14. **CARTRIDGES, PRACTICE**. Cartridges specially designed for mere practice or short-range work with guns which ordinarily take larger or more powerful ammunition. Miniature and subcaliber cartridges are here included.

15. **CARTRIDGES, SHOT**. Cartridges having features peculiar to the firing of groups of shot rather than single projectiles.

16. **CARTRIDGES, SHELLS**. Cartridges wherein the novelty resides wholly in the shell.

17. **CARTRIDGES, SHELLS, BREECH STRUCTURE**. The arrangement at the rear or breach of the shell.

18. **CARTRIDGES, PRIMERS**. Arrangements of the cap, anvil, or the fulminate support, also modification of the shell to accommodate these parts.

19. **CARTRIDGES, PRIMERS, ELECTRIC**. Primers adapted to be exploded by electric current.

Search Class—

102—AMMUNITION AND EXPLOSIVE DEVICES, subclasses 10, **Blasting, Fuses, Electric**, and 38, **Projectiles, Shells, Fuses, Electric**.

CLASS 102—Continued.

20. **PYROTECHNICS**. Various fireworks for display, amusement, flash-light, or signal purposes.

21. **PYROTECHNICS, CARTRIDGES**. Pyrotechnics in cartridge form, adapted to be fired in an ordinary gun.

22. **PYROTECHNICS, FIRE-CRACKERS**. Includes novel structures of fire-crackers.

23. **PYROTECHNICS, ROCKETS**. Structures of sky-rockets, their supporting-sticks, and some devices for holding them when they are set off.

Search Class—

102—AMMUNITION AND EXPLOSIVE DEVICES, subclass 2, **Torpedoes**.

24. **PYROTECHNICS, TORCHES**. Pyrotechnical devices adapted to burn for an appreciable time and be held in the hand or to a fixed support.

25. **PYROTECHNICS, TOY TORPEDOES**. Forms of the toy torpedo adapted to be thrown by hand and exploded on impact.

26. **PROJECTILES**. The bullet, shell, or other part which is projected or "fired" from the gun.

27. **PROJECTILES, BOMB-LANCES**. Lances usually employed in fishing operations, adapted to be fired from a more or less special gun and carrying an explosive charge to be exploded in the object struck by the lance.

28. **PROJECTILES, CAPPED OR COVERED**. The various capped and also the "jacketed" projectiles designed for securing greater penetration, strength, etc.

29. **PROJECTILES, SHELLS**. Projectiles adapted to carry an explosive charge to be fired on impact or by time-fuse.

30. **PROJECTILES, SHELLS, HIGH-EXPLOSIVE**. Shells especially designed to carry a high-explosive charge.

31. **PROJECTILES, LUBRICATING**. Projectiles which have arrangements for lubricating the inside of the gun-barrel as the projectile passes through in its flight.

32. **PROJECTILES, SELF-ROTATING**. Various means for giving a spinning or rotating movement by the effect of the air on the projectile in its flight, thus obviating the necessity for or accelerating the effect of the gun-rifling.

33. **PROJECTILES, CANISTERS**. Cases inclosing a number of projectiles adapted to burst either in the air or on impact, thus scattering the contents.

34. **PROJECTILES, LINE-CARRYING**. Projectiles specially designed to be fired or projected to or over ships, in windows of burning buildings, or to other inaccessible places to carry life or other lines.

Search Class—

102—AMMUNITION AND EXPLOSIVE DEVICES, subclass 27, **Projectiles, Bomb-lances**.

35. **PROJECTILES, OIL-DISTRIBUTING**. Projectiles adapted to be projected upon the water and permit oil to escape to calm the waves.

36. **PROJECTILES, SHELLS, FUSES**. Construction of fuses or primers for igniting the explosive charges in shells.

37. **PROJECTILES, SHELLS, FUSES, COMBINATION**. Projectiles which combine both the time and percussion fuse arrangement. In some the time-fuse may at will be rendered inoperative, while in others the time-fuse is always ignited on the shell leaving the gun and explodes the charge unless the shell strikes in the meantime.

38. **PROJECTILES, SHELLS, FUSES, ELECTRIC**. Fuses adapted to be ignited by an electric current.

Search Class—

102—AMMUNITION AND EXPLOSIVE DEVICES, subclasses 10, **Blasting, Fuses, Electric**, and 19, **Cartridges, Primers, Electric**.

39. **PROJECTILES, SHELLS, FUSES, PERCUSSION**. Fuses adapted to be exploded by impact of the shell. In some cases the shell explodes immediately, while in others the fuse is ignited, but the explosion is momentarily delayed, usually to permit the shell to penetrate the armor or other defense, so the explosion will take place inside the vessel or fort.

40. **PROJECTILES, SABOTS**. Bands, disks, flanges, shoes, etc., placed on or attached to the shell to engage the rifling in the gun and to prevent windage.

41. **PROJECTILES, SABOTS, WEDGE-EXPANDED**. Sabots which instead of being swaged outward to engage the grooves of the gun are expanded by sliding wedge-shaped parts or themselves slide upon wedge-shaped or conical parts.

42. **PROJECTILES, WADS**. Various forms of gun or cartridge wads.

43. **PRIMERS**. Various charge-primers—such as fulminate or percussion wafers, ribbons, strips, pellets, balls, sticks, and cartridges—where the invention does not reside in the composition of the compound.

CLASS 106.—PLASTIC COMPOSITIONS.

DEFINITIONS.

Class.

This class includes compositions which are molded or spread in a plastic condition, also processes of treating and making the composition and processes of mixing the ingredients to form the composition. It does not include processes which are clearly distinct from the composition, such as processes of ornamenting, decorating, molding, and coating; nor does it include compositions for such special purposes as filters, artificial fuel, explosives, medicines, incandescent mantels, filaments, and carbons, inking-rollers, journal-boxes, abrasives, detergents, and lubricants, where the substance may be plastic, but is not necessarily so.

Compositions intended particularly for writing-surfaces, such as blackboards and slates, will be classified in class 35, EDUCATIONAL APPLIANCES, and will be cross-referenced into this class whenever considered necessary.

Patents on the structure of the article are classified with the art to which they belong, and when they contain in addition any novelty in the composition are cross-referenced into this class.

This class is superior to class 134, LIQUID COATING COMPOSITIONS, so that compositions which are intended for use either in a plastic condition or in such condition that they may be spread with a brush will be classified here and cross-referenced into class 134, LIQUID COATING COMPOSITIONS.

Subclasses.

1. MISCELLANEOUS. Compositions of a plastic nature not otherwise classifiable.

Search Class—

134—LIQUID COATING COMPOSITIONS, subclasses 1, Miscellaneous; 2, Barrel-lining; 7, Leather coating and polishing; 11, Fabric coating and waterproofing; 18, Sizing, and 39, Paint.

- 1.5. SOUND RECORD. Moldable compositions specially adapted to be formed into record tablets for sound recording and reproducing machines.

Search Class—

181—ACOUSTICS, subclass 17, Graphophones; Tablets, for sound record tablets arranged in laminae or presenting other local variations in composition.

2. BATTERY-JARS. Compositions for making or lining battery jars and cells.

3. BOOT HEELS AND SOLES. Compositions for heels and soles of boots and shoes.

4. COB PIPES AND FILLINGS. Compositions for making, or filling interstices of, cob pipes.

5. CRAYONS AND PENCILS. Compositions for crayons, pencils, and billiard-chalk.

Search Class—

134—LIQUID COATING COMPOSITIONS, subclass 38, Ink, Writing, Powders.

6. DENTAL. Compositions for dental plates and fillings.

7. FLOOR-CLOTH. Compositions for making floor cloth and coverings.

8. LUTING. Compositions of a plastic nature for packing joints and for use as a putty.

9. FIRE-BRICK AND REFRACTORY LININGS. Compositions for fire-brick, crucibles, and refractory linings for furnaces and stoves not containing ingredients of an argillaceous nature, which are in the following subclass.

Note.—Compositions for lining furnaces, converters, etc., in which there is a chemical reaction with the molten metal are classified in class 75, METALLURGY.

Search Class—

106—PLASTIC COMPOSITIONS, subclasses 11, Fire-hardened; 24, Artificial stone, and 18, Heat-insulating, and the subclasses thereunder.

10. FIRE-BRICK AND REFRACTORY LININGS, ARGILLACEOUS. Compositions for fire-brick, crucibles, and refractory linings for furnaces and stoves containing clay or other earth of an argillaceous nature.

Search Class—

106—PLASTIC COMPOSITIONS, subclasses 11, Fire-hardened; 21, Heat-insulating, Argillaceous; 26, Artificial stone, Hydraulic Cement, Argillaceous, and 35, Artificial stone, Argillaceous.

11. FIRE-HARDENED. Compositions which are hardened by firing at a high temperature. Includes compositions of a ceramic nature.

Search Class—

106—PLASTIC COMPOSITIONS, subclasses 9, Fire-brick and refractory linings; 10, Fire-brick and refractory linings, Argillaceous; 21, Heat-insulating, Argillaceous, and 35, Artificial stone, Argillaceous.

12. ELECTRICAL INSULATING. Compositions for use as insulators of electricity.

Search Class—

106—PLASTIC COMPOSITIONS, subclass 18, Heat-insulating, and the subclasses thereunder.

CLASS 106—Continued.

13. ELECTRICAL INSULATING, RUBBER. Compositions for electrical insulating containing rubber, caoutchouc, gutta-percha, balata, or other ingredients in the nature of rubber.

Search Class—

134—LIQUID COATING COMPOSITIONS, subclasses 54, Paint, Rubber, and 17, Fabric coating and waterproofing, Rubber.

14. ELECTRICAL INSULATING, SOLUBLE SILICATES. Compositions for electrical insulating containing silicates of the alkaline metals, usually sodium or potassium, and otherwise known as "water-glass."

Search Classes—

106—PLASTIC COMPOSITIONS, subclasses 19, Heat-insulating, soluble silicates, and 30, Artificial stone, Soluble silicates.

134—LIQUID COATING COMPOSITIONS, subclass 45, Paint, Fire-proof, Soluble silicates.

15. ELECTRICAL INSULATING, BITUMINOUS AND RESINOUS. Compositions for electrical insulating containing ingredients of a bituminous or resinous nature, except tar and wax (which are classified under the next two subclasses). Under these "bituminous and resinous" subclasses are included all compositions for electrical insulating that contain ingredients in the nature of bitumen, asphalt, resin, etc., which are characterized by the fact that they are softened by heat and harden when cold or are dissolved by solvents and harden by evaporation of these solvents. Includes gum-resins, but not gums.

Search Classes—

106—PLASTIC COMPOSITIONS, subclass 31, Artificial stone, Bituminous and resinous.

134—LIQUID COATING COMPOSITIONS, subclasses 3, Barrel-lining, Bituminous and resinous; 8, Leather coating and polishing, Bituminous and resinous; 13, Fabric coating and waterproofing, Bituminous and resinous; 21, Sizing, Bituminous and resinous; 36, Ink, Printers', Bituminous and resinous; 41, Paint, Antifouling and insecticidal, Bituminous and resinous, and 51, Paint, Bituminous and resinous.

16. ELECTRICAL INSULATING, BITUMINOUS AND RESINOUS, T.A.R. Compositions for electrical insulating containing ingredients of a tarry nature, such as coal-tar, gas-tar, wood-tar, pine-tar, petroleum-tar, tar-pitch, etc.

Search Classes—

106—PLASTIC COMPOSITIONS, subclass 32, Artificial stone, Bituminous and resinous, Tar.

134—LIQUID COATING COMPOSITIONS, subclasses 4, Barrel-lining, Bituminous and resinous, Tar; 14, Fabric coating and waterproofing, Bituminous and resinous, Tar; 42, Paint, Antifouling and insecticidal, Bituminous and resinous, Tar, and 52, Paint, Bituminous and resinous, Tar.

17. ELECTRICAL INSULATING, BITUMINOUS AND RESINOUS, WAX. Compositions for electrical insulating containing ingredients of a waxy nature, such as beeswax, mineral wax, ozokerite, paraffin, etc.

Search Classes—

106—PLASTIC COMPOSITIONS, subclass 33, Artificial stone, Bituminous and resinous, Wax.

134—LIQUID COATING COMPOSITIONS, subclasses 5, Barrel-lining, Bituminous and resinous, Wax; 9, Leather coating and polishing, Bituminous and resinous, Wax; 15, Fabric coating and waterproofing, Bituminous and resinous, Wax; 22, Sizing, Bituminous and resinous, Wax; 43, Paint, Antifouling and insecticidal, Bituminous and resinous, Wax, and 53, Paint, Bituminous and resinous, Wax.

18. HEAT-INSULATING. Compositions for heat-insulating, such as coverings for steam-boilers, steam and refrigerative pipes and refrigerators, and not classified in the three following subclasses.

Search Class—

106—PLASTIC COMPOSITIONS, subclass 12, Electrical insulating, and the subclasses thereunder.

19. HEAT-INSULATING, SOLUBLE SILICATES. Compositions for heat insulation containing silicates of the alkaline metals, usually sodium or potassium, and otherwise known as "water-glass."

Search Classes—

106—PLASTIC COMPOSITIONS, subclasses 14, Electrical insulating, Soluble silicates, and 30, Artificial stone, Soluble silicates.

134—LIQUID COATING COMPOSITIONS, subclass 45, Paint, Fire-proof, Soluble silicates.

20. HEAT-INSULATING, PLASTER-OF-PARIS. Compositions for heat insulation containing plaster-of-paris, otherwise known as "calcined gypsum," "calcined plaster," "calcium sulfate" or "sulfate of lime."

Search Class—

106—PLASTIC COMPOSITIONS, subclass 34, Artificial stone, Plaster-of-paris.

21. HEAT-INSULATING, ARGILLACEOUS. Compositions for heat-insulation containing clay or other earth of an argillaceous nature.

Search Class—

106—PLASTIC COMPOSITIONS, subclasses 10, Fire-brick and refractory linings, Argillaceous; 11, Fire-hardened; 26, Artificial stone, Hydraulic cement, Argillaceous, and 35, Artificial stone, Argillaceous.

CLASS 106—Continued.

22. **ARTIFICIAL IVORY AND HARD RUBBER.** Compositions for forming artificial ivory and substances in the nature of hard rubber. The substance imitated depends chiefly upon the coloring material.

Search Classes—

106—PLASTIC COMPOSITIONS, subclass 37, Pyroxylin.

23. **ARTIFICIAL RUBBER.** Compositions which are used as substitutes for india-rubber, caoutchouc, or gutta-percha. Does not include compositions which are used to imitate hard rubber.

24. **ARTIFICIAL STONE.** Miscellaneous compositions for artificial stone which are not included in any of the subclasses. Under "Artificial stone" and its subclasses are included compositions which set without firing and form a material in the nature of stone. Here are included all plastic self-setting compositions for paving, roofing, and plastering.

25. **ARTIFICIAL STONE, HYDRAULIC CEMENT.** Compositions for hydraulic cement—i. e., cement which sets under water—except those containing ingredients of an argillaceous nature, which are in the following subclass.

26. **ARTIFICIAL STONE, HYDRAULIC CEMENT, ARGILLACEOUS.** Compositions for hydraulic cement containing clay or other earth of an argillaceous nature.

27. **ARTIFICIAL STONE, INDURATING.** Compositions used to harden artificial stone. Most of these compositions are used in treating gypsum without pulverization in order to produce artificial marble.

28. **ARTIFICIAL STONE, RETARDERS.** Compositions for retarding the setting of artificial-stone compositions.

29. **ARTIFICIAL STONE, OXYCHLORID AND OXYSULFATE.** Compositions for artificial stone containing an acid and a chlorid or sulfate, usually of the same base, which react to form an oxychlorid or an oxysulfate. The base is usually magnesium; but zinc and other related metals are used.

30. **ARTIFICIAL STONE, SOLUBLE SILICATES.** Compositions for artificial stone containing silicates of the alkaline metals, usually sodium or potassium, and otherwise known as "water-glass."

Search Classes—

106—PLASTIC COMPOSITIONS, subclasses 14, Electrical insulating, Soluble silicates, and 19, Heat-insulating, Soluble silicates.

134—LIQUID COATING COMPOSITIONS, subclass 45, Paint, Fire-proof, Soluble silicates.

31. **ARTIFICIAL STONE, BITUMINOUS AND RESINOUS.** Compositions for artificial stone which contain ingredients of a bituminous or resinous nature, except those which contain tar and wax, which are classified in the two following subclasses.

Note.—Under this and subordinate subclasses are included all compositions for artificial stone which contain ingredients in the nature of bitumen, asphalt, resin, etc., which are characterized by the fact that they are softened by application of heat and harden when cold or are dissolved by solvents and harden by evaporation of these solvents. Includes gum-resins, but not gums.

Search Classes—

106—PLASTIC COMPOSITIONS, subclass 15, Electrical insulating, Bituminous and resinous.

134—LIQUID COATING COMPOSITIONS, subclasses 3, Barrel-lining, Bituminous and resinous; 8, Leather coating and polishing, Bituminous and resinous; 13, Fabric coating and waterproofing, Bituminous and resinous; 21, Sizing, Bituminous and resinous; 36, Ink, Printers', Bituminous and resinous; 41, Paint, Antifouling and insecticidal, Bituminous and resinous, and 51, Paint, Bituminous and resinous.

32. **ARTIFICIAL STONE, BITUMINOUS AND RESINOUS, TAR.** Compositions for artificial stone containing ingredients of a tarry nature, such as coal-tar, gas-tar, wood-tar, pine-tar, petroleum-tar, tar-pitch, etc.

Search Classes—

106—PLASTIC COMPOSITIONS, subclass 16, Electrical insulating, Bituminous and resinous, Tar.

134—LIQUID COATING COMPOSITIONS, subclasses 4, Barrel-lining, Bituminous and resinous, Tar; 14, Fabric-coating and waterproofing, Bituminous and resinous, Tar; 42, Paint, Antifouling and insecticidal, Bituminous and resinous, Tar, and 52, Bituminous and resinous, Tar.

33. **ARTIFICIAL STONE, BITUMINOUS AND RESINOUS, WAX.** Compositions for artificial stone containing ingredients of a waxy nature, such as beeswax, mineral wax, ozokerite, paraffin, etc.

Search Classes—

106—PLASTIC COMPOSITIONS, subclass 17, Electrical insulating, Bituminous and resinous, Wax.

134—LIQUID COATING COMPOSITIONS, subclasses 5, Barrel-lining, Bituminous and resinous, Wax; 9, Leather coating and polishing, Bituminous and resinous, Wax; 15, Fabric coating and waterproofing, Bituminous and resinous, Wax; 22, Sizing, Bituminous and resinous, Wax; 43, Paint, Antifouling and insecticidal, Bituminous and resinous, Wax; 53, Paint, Bituminous and resinous, Wax.

CLASS 106—Continued.

34. **ARTIFICIAL STONE, PLASTER-OF-PARIS.** Compositions for artificial stone containing plaster-of-paris, otherwise known as "calcined gypsum," "calcined plaster," "calcium sulfate," or "sulfate of lime."

Search Class—

106—PLASTIC COMPOSITIONS, subclass 20, Heat-insulating, Plaster-of-paris.

35. **ARTIFICIAL STONE, ARGILLACEOUS.** Compositions for artificial stone containing clay or other earth of an argillaceous nature.

Search Class—

106—PLASTIC COMPOSITIONS, subclasses 10, Fire-brick and refractory linings, Argillaceous; 11, Fire-hardened; 21, Heat-insulating, Argillaceous, and 26, Artificial stone, Hydraulic cement, Argillaceous.

36. **ARTIFICIAL STONE, GELATINOUS AND GUMMY.** Compositions for artificial stone containing ingredients of a gelatinous or gummy nature, such as ordinary glue, gelatin, flour, starch, dextrine, etc., and gums, such as gum-arabic and gum-tragacanth. These substances are characterized by the fact that they either dissolve, soften, or gelatinize in water. Does not include the gum-resins.

Search Classes—

106—PLASTIC COMPOSITIONS, subclass 39, Gelatinous and gummy.

134—LIQUID COATING COMPOSITIONS, subclasses 6, Barrel-lining, Gelatinous and gummy; 10, Leather coating and polishing, Gelatinous and gummy; 16, Fabric coating and waterproofing, Gelatinous and gummy; 23, Sizing, Gelatinous and gummy; 55, Paint, Gelatinous and gummy, and 19, Sizing, Laundry starch and polish.

37. **PYROXYLIN.** Plastic compositions containing pyroxylin, gun-cotton, nitrocellulose, or collodion. Includes compositions for celluloid. When the patent falls in one of the subclasses based on the use for which the composition is intended, it is classified in that subclass and cross-referenced into this subclass.

Search Class—

134—LIQUID COATING COMPOSITIONS, subclass 59, Pyroxylin.

38. **PROTEIDS.** Plastic compositions containing one or more of the proteids, such as casein, gluten, albumen, fibrin, etc., or substances made up partly of proteids, such as milk and blood, and characterized by the fact that they are coagulated by heat or chemicals. When the patent falls in one of the subclasses based on the use for which the composition is intended, it is classified there and cross-referenced into this subclass.

Search Class—

134—LIQUID COATING COMPOSITIONS, subclasses 12, Fabric coating and waterproofing, Proteids; 20, Sizing, Proteids, and 50, Paint, Proteids.

39. **GELATINOUS AND GUMMY.** Plastic compositions containing ingredients of a gelatinous or gummy nature, such as ordinary glue, gelatin, flour, starch, dextrine, etc., and gums, such as gum-arabic and gum-tragacanth. These substances are characterized by the fact that they either dissolve, soften, or gelatinize in water. Does not include the gum-resins. When the patent falls in one of the subclasses based on the use for which the composition is intended, it is classified there and cross-referenced into this subclass, with the exception of those which fall under the head of "Artificial stone."

Search Classes—

106—PLASTIC COMPOSITIONS, subclass 36, Artificial stone, Gelatinous and gummy.

134—LIQUID COATING COMPOSITIONS, subclasses 6, Barrel-lining, Gelatinous and gummy; 10, Leather coating and polishing, Gelatinous and gummy; 16, Fabric coating and waterproofing, Gelatinous and gummy; 23, Sizing, Gelatinous and gummy; 55, Paint, Gelatinous and gummy, and 19, Sizing, Laundry starch and polish.

40. **VISCOSE AND CELLULOSE.** Plastic compositions containing cellulose or the solution of cellulose known as "viscose." When the patent falls in one of the subclasses based on the use for which the composition is intended, it is classified there and cross-referenced into this subclass.

41. **MISCELLANEOUS TREATMENT.** Methods of treating plastic compositions not included under the following five subclasses.

Note.—Under the "Treatment" subclasses are included methods of making, compounding, and treating plastic compositions, but not including the handling of the composition in the manufacture of articles therefrom, which will be found in class 25, PLASTIC-BLOCK AND EARTHENWARE APPARATUS, or in class 18, PLASTICS.

Search Class—

134—LIQUID COATING COMPOSITIONS, subclass 60, Miscellaneous treatment.

42. **FIRE-HARDENED, TREATMENT.** Methods of treatment for making compositions which are to be hardened by firing.

43. **ARTIFICIAL STONE, HYDRAULIC CEMENT, TREATMENT.** Methods of treatment for making hydraulic cement.

44. **ARTIFICIAL STONE, TREATMENT.** Methods of treatment for making compositions for artificial stone.

45. **ARTIFICIAL STONE, INDURATING, TREATMENT.** Methods of treatment for hardening artificial stone.

46. **PROTEIDS, TREATMENT.** Methods of treatment for making plastic compositions containing proteids.

CLASS 107.—BREAD, PASTRY, AND CONFECTION MAKING.

DEFINITIONS.

Class.

This class includes the art of mechanically working and manipulating dough and paste to make such alimentary articles as bread, pies, crackers, macaroni, jellies, ice-cream, confectionery, lozenges, tablets, pills, yeast-cakes, croquettes, and the like.

For classification purposes sugar, after its manufacture is completed, is treated like confectionery. Cutting it when in a soft state and molding it when entirely independent of sugar-manufacturing operations—such as draining, liquoring, crystalizing, etc.—are included in this class; but apparatus for compressing it into blocks is classified in class 25, PLASTIC BLOCK AND EARTHENWARE APPARATUS, and when the cutting or molding is combined with any such sugar-manufacturing operation the patents are classified in class 127, SUGAR AND SALT. Cutting, crushing, grinding, and pulverizing hard sugar are classified in class 83, MILLS, subclass 61, Sugar and salt crushers.

This class includes processes, machines, and implements for performing all operations involved in making these articles—such as mixing, kneading, beating, whipping, aerating, flour, eggs, sugar, and other ingredients to make dough, paste, batter, etc.; slabbing, sheeting, molding, dividing, and cutting the dough or paste; cleaning, stacking, flouring, salting, sugaring, and ornamenting the articles; distributing them into pans, and making and manipulating molds for candies; also bakers' ovens.

Molds for use in this art are generally included, but waffle-irons, bake-pans, and the like, are classified in class 53, DOMESTIC COOKING VESSELS, if uncombined, or in class 126, STOVES AND FURNACES, if provided with heating means.

So-called "ice-cream freezers," which are merely molds adapted to be introduced into a congealing agent, but without means for holding such agent and without agitating or scraping means, are included in this class. Ice-cream freezers not so limited are in class 62, REFRIGERATION. Molding devices also used for preserving ice-cream after manufacture are included even when including refrigerating means.

Dough-dividing machines which weigh out a definite quantity are classified in class 73, MEASURING INSTRUMENTS; but those which merely measure it out by filling a mold are included in this class.

Scoops, ladles, cake-turners, and other kitchen and table articles not used for performing the operations named are classified in class 65, KITCHEN AND TABLE ARTICLES. Flour sifters are classified in class 83, MILLS, subclass 60, Sifters and screens, Household.

Kitchen tables, in combination with dough-boards and other implements, are classified in class 45, FURNITURE, subclasses 16, Kitchen-cabinets, and 17, Tables, Kitchen.

Vegetable and bread cutters and slicers are classified in class 146, VEGETABLE CUTTERS AND CRUSHERS.

Milling operations and substitutions therefor which comprise the preparation of cereals for use with or without grinding, involving crushing the grains and forming them into flakes or shreds, are classified in class 83, MILLS; but the manufacture of biscuits, cakes, and other forms from these prepared cereals even when involving the preliminary preparation in combination are included in this class.

Food articles, food compounds or compositions, the treatment of the ingredients in making them, the chemical treatment of cereal products in making bread and other foods, making and using leaven for these purposes, and combinations thereof with any of the above-mentioned operations are classified in class 99, PRESERVING, subclasses 10, Panification, and 11, Food compounds.

Confectionery compositions, the treatment of the ingredients in making them, boiling and mixing kettles therefor and confectionery articles are classified in class 127, SUGAR AND SALT, subclasses 4, Confectionery, and 11, Mixers.

Medicinal tablet and pill compositions, the treatment of the ingredients in making them, and the articles are classified in class 167, MEDICINES.

Coating confectionery, pills, cakes, and the like when not involving any of the operations belonging to this class is classified in class 91, COATING.

Coating confectionery and pills, and printing lozenges are included in this class only when in combination with some of the other operations mentioned.

Subclasses.

1. COMPOSITE CAKE AND CONFECTION APPARATUS. Apparatus for making cakes, pies, ice-cream, confections, pills, etc., in two or more layers, usually of at least two different materials, and for applying ornamentation. The article is usually made by forming the several layers at once and uniting them. The mere coating of articles previously formed is classified in class 91, COATING.

Search Classes—

107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 54, Processes.

18—PLASTICS, subclasses 11, Molding devices, Rolling, Compound; 13, Molding devices, Die-expressing, Compound; 36, Molding devices, Molds. Blank covering and filling.

2. SHREDDED CEREAL BISCUIT APPARATUS. Apparatus for making biscuits and other articles from shreds of cereal material. Includes apparatus for shredding the cereals when in combination with the biscuit-forming means, but not otherwise.

CLASS 107—Continued.

3. STARCH-MOLDING APPARATUS. Machines and plants for filling trays with starch or other mold material or for making molds for confectionery and the like, either singly or combined with each other or with apparatus for filling the molds with candy or the like, separating it from the mold, or cleaning it.

Search Classes—

18—PLASTICS, subclasses 4, Molding plants; 16, Molding devices, Presses; 23, Molding devices, Presses, Stationary-mold.

22—METAL-FOUNDING, subclass 9, Molding apparatus, and subclasses thereunder.

4. COMBINED MACHINES. Machines for performing two or more distinct operations and not classifiable in either of the next two subclasses. In these subclasses the feeding of the material to the machine, whether it is at the same time made into a sheet or slab or not, is not considered as a separate operation, nor are mixing, kneading, flouring, or dusting the dough.

Search Class—

107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 1, Composite cake and confection apparatus; 2, Shredded cereal biscuit apparatus, and 3, Starch-molding apparatus.

5. COMBINED MACHINES, PRINTING AND CUTTING LOZENGES. Machines for printing on a sheet of dough and then cutting it up to make lozenges, or for first cutting it and then printing on the lozenges. The printing device usually has means for inking it and is always distinct from the shaping means.

Search Class—

101—PRINTING.

6. COMBINED MACHINES, CUTTING AND DISTRIBUTING. Machines which cut crackers, lozenges, and other articles from a sheet or slab of dough and then separate them from the scrap, conveying the articles and scrap to different points.

Note.—Merely ejecting them from the cutters and merely arranging the articles without separating scrap are not included.

7. MISCELLANEOUS. Miscellaneous single-operation machines and attachments for working dough, paste, batter, etc., and for making and treating the articles mentioned in the general definition and not classifiable in any of the other subclasses.

Search Class—

107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 4, Combined machines.

8. MOLDING APPARATUS. Machines for molding not classifiable in any of the next eleven subclasses. Some include in combination means for stripping the articles from the molds and means for feeding the material to the mold, even if involving sheeting, slabbing, mixing, or kneading.

Search Classes—

107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 1, Composite cake and confection apparatus; 3, Starch-molding apparatus; 27, Depositing apparatus; 28, Depositing apparatus, Valve cut-off, and 29, Depositing apparatus, Valve cut-off, Transversely-reciprocating.

18—PLASTICS, subclass 5, Molding devices.

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 41, Block-molding machines, and the subclasses thereunder, and 7, Soap-molding devices.

9. MOLDING APPARATUS, LOAF-FORMING. Molding-machines for forming bread, cake, and other loaves by rolling or folding a sheet or slab of dough. Some include cutting or flattening the dough.

10. MOLDING APPARATUS, ROLLING. Machines for rolling dough or paste into stick candy and other articles, except pills and sheets, as by passing it between rollers or a roller and another surface which do not give the article itself an axial or rolling motion. Some include the twisting of the article when performed entirely by the molding-rollers. Machines which merely employ a rotary compressing means are in subclass 15, Presses, in this class.

Search Classes—

107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 9, Molding apparatus, Loaf-forming; 11, Molding apparatus, Rolling, Pills; 12, Molding apparatus, Rolling, Sheet; 13, Molding apparatus, Rolling, Axial, and 34, Mixers, Kneaders, and beaters, Roller.

18—PLASTICS, subclasses 9, Molding devices, Rolling; 10, Molding devices, Rolling, Sheets, and 11, Molding devices, Rolling, Compound.

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 21, Roller-forming.

11. MOLDING APPARATUS, ROLLING PILLS. Machines for forming pills by rolling. Some include in combination means for forming a sheet or cylinder; but those in which the operation does not go to the extent of making a pill are not included.

Search Classes—

107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 13, Molding apparatus, Rolling, Axial.

25—PLASTIC BLOCK AND EARTHENWARE APPARATUS subclass 5, Playing-marble machines.

CLASS 107—Continued.

12. **MOLDING APPARATUS, ROLLING, SHEETING.** Machines for rolling dough from a shapeless mass or a thick sheet to a sheet suitable for cutting or other shaping operation. Devices which perform a kneading operation and by the same means simultaneously roll the dough to a sheet, and those that have interchangeable kneading and sheeting rollers used successively in the same bearings are included, but not those that in kneading incidentally reduce dough to a sheet and do not leave it in that form. Feed-rollers for cutting-machines which have this function are included.

Search Classes—

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 1, Composite cake and confection apparatus; 5, Combined machines, Printing and cutting lozenges; 6, Combined machines, Cutting and distributing; 10, Molding apparatus, Rolling; 25, Cutting apparatus, Reciprocating-die, Dough-feeding, and 34, Mixers, Kneaders and beaters, Roller.
- 18—PLASTICS, subclasses 2, Miscellaneous apparatus, Vulcanizable Gums; 9, Molding devices, Rolling, and 10, Molding devices, Rolling, Sheets.
13. **MOLDING APPARATUS, ROLLING, AXIAL.** Machines for rolling in which the work is of circular section (usually spherical or cylindrical) and is acted upon by the rolling means in such a way as to rotate the work about its own axis and give it a rolling motion transverse to its axis, but not to give it at the same time a movement in the direction of its axis.

Search Classes—

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 9, Molding apparatus, Loaf-forming, and 11, Molding apparatus, Rolling, Pills.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 5, Playing-marble machines.
- 80—METAL ROLLING, subclasses 18, Concave and roll; 19, Platen and roll; 22, Axial rolling; and 23, Axial rolling, Pattern-rolls.

14. **MOLDING APPARATUS, DIE-EXpressING.** Machines and dies for shaping dough and paste by forcing it through a die. Usually includes a screw or other forcing device which can sometimes act as a mixer and a device for cutting. Includes twisting the candy, etc., when performed by the rotation of the die or receptacle, but not when performed by external means.

Search Classes—

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 1, Composite cake and confection apparatus.
- 17—BUTCHERING, subclasses 6, Sausage-machines, and 20, Meat-cutters, Cylinder and concave.
- 18—PLASTICS, subclasses 12, Molding devices, Die-expressing; 13, Molding devices, Die-expressing, Compound; 14, Molding devices, Die-expressing, Tube and hollow; and 30, Molding devices, Chargers.
- 22—METAL-FOUNDING, subclass 166, Cores, Pipe.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 8, Soap-molding devices, Die-expressing, and 11, Die-expressing, and the subclasses thereunder.
- 31—DAIRY, subclass 65, Butter, Cutters, and subclass 68, Cheese, Cutters.
- 207—PLASTIC METAL WORKING, die-expressing subclasses.

15. **MOLDING APPARATUS, PRESSES.** Machines for molding alimentary articles by means of a press.

Search Classes—

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 3, Starch-molding apparatus; 16, Molding apparatus, Presses, Popcorn; 17, Molding apparatus, Presses, Tablet; and 18, Molding apparatus, Presses, Tablet, Stationary-mold.
- 18—PLASTICS, subclass 16, Molding devices, Presses, and the subclasses thereunder.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 45, Block-presses, and the subclasses thereunder.
- 31—DAIRY, subclass 25, Butter workers and molds.
- 100—PRESSES, appropriate subclasses.
- 131—TOBACCO, subclass 14, Plug-making.

16. **MOLDING APPARATUS, PRESSES, POPCORN.** Presses for molding popcorn.

Search Classes—

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 15, Molding apparatus, Presses; 17, Molding apparatus, Presses, Tablet; and 18, Molding apparatus, Presses, Tablet, Stationary-mold.
- 18—PLASTICS, subclasses 16, Molding devices, Presses; 20, Molding devices, Presses, Rotary-mold support; 21, Molding devices, Presses, Rotary-mold support, Peripheral; and 22, Molding devices, Presses, Reciprocating-mold.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 9, Soap-molding devices, Rotary-mold; the subclasses under Block-presses, Portable mold; those under 54, Block-presses, Reciprocating-mold; those under Block-presses, Rotary-mold; 99, Block-presses, Endless chain of molds, Continuous travel; and 100, Block-presses, Endless chain of molds, Intermittent travel.

CLASS 107—Continued.

17. **MOLDING APPARATUS, PRESSES, TABLET.** Presses for molding medicinal tablets in which the mold moves continuously or intermittently between molding operations.

Search Classes—

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 15, Molding apparatus, Presses, and 16, Molding apparatus, Presses, Popcorn.
- 18—PLASTICS, subclasses 16, Molding devices, Presses; 20, Molding devices, Presses, Rotary-mold support; 21, Molding devices, Presses, Rotary-mold support, Peripheral; and 22, Molding devices, Presses, Reciprocating-mold.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 9, Soap-molding devices, Rotary-mold; the subclasses under Block-presses, Portable mold; those under 54, Block-presses, Reciprocating-mold; those under Block-presses, Rotary-mold; 99, Block-presses, Endless chain of molds, Continuous travel; and 100, Block-presses, Endless chain of molds, Intermittent travel.

18. **MOLDING DEVICES, PRESSES, TABLET, STATIONARY-MOLD.** Presses for molding medicinal tablets in which the mold is stationary.

Search Classes—

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 15, Molding apparatus, Presses, and 16, Molding apparatus, Presses, Popcorn.
- 18—PLASTICS, subclass 23, Molding devices, Presses, Stationary-mold.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 10, Soap-molding devices, Stationary-mold, and the subclasses under Block-presses, Stationary-mold.

19. **MOLDING APPARATUS, MOLDS.** Molds and parts of molds for use in this art not combined with any means for moving the mold or pressing the article, but including movable ejectors.

Search Classes—

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 43, Implements, Ice-cream dishers.
- 18—PLASTICS, subclasses 34, Molding devices, Molds; 39, Molding devices, Molds, Casting; 42, Molding devices, Molds, Two and three part; 43, Molding devices, Molds, Clamping; and 44, Molding devices, Molds, Dies and matrices.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 118, Molds; 119, Molds, Block, and 120, Molds, Block ejectors.
- 31—DAIRY, subclasses 21, Cheese-hoops, and 25, Butter workers and molds.
- 53—DOMESTIC COOKING VESSELS, subclass 10, Waffle irons.
- 127—SUGAR AND SALT, subclasses 6, Cube sugar, and 12, Molds and carriages.
- 131—TOBACCO, subclass 9, Molding cigars.

20. **CUTTING APPARATUS.** Machines, dies, and cutters for cutting articles from dough, etc. Some have a surface inside the cutter which has a molding operation and some have means for ejecting the cut article.

Search Classes—

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 27, Depositing apparatus.
- 17—BUTCHERING, subclass 18, Meat-cutters, Cube.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 105, Cutters, and the subclasses thereunder.
- 31—DAIRY, subclasses 65, Butter, Cutters, and 68, Cheese, Cutters.
- 87—OILS, FATS, AND GLUE, subclass 7, Glue.
- 164—CUTTING AND PUNCHING SHEETS AND BARS, appropriate subclasses.

21. **CUTTING APPARATUS, KNIFE.** Cutting-machines using one or more knife-blades specialized for cutting dough, etc.

Search Classes—

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 2, Shredded cereal biscuit apparatus; 11, Molding apparatus, Rolling, Pills; 13, Molding apparatus, Rolling, Axial; 14, Molding apparatus, Die-expressing; 22, Cutting apparatus, Knife, Circular; and 29, Depositing apparatus, Valve cut-off, Transversely-reciprocating.
- 17—BUTCHERING, subclasses 18, Meat-cutters, Cube; 23, Meat-cutters, Rocking knife, and 24, Meat-cutters, Slicers.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 106, Cutters, and the subclasses thereunder.
- 31—DAIRY, subclasses 22, Cheese-vats and curd-breakers; 65, Butter, Cutters; and 68, Cheese, Cutters.
- 83—MILLS, subclass 61, Sugar and salt crushers.
- 87—OILS, FATS, AND GLUE, subclass 7, Glue.
- 100—PRESSES, subclass 53, Expressing, Articles and attachments, Cake-trimmers.
- 131—TOBACCO, subclasses 33, Tobacco-cutters, Pivoted-knife; 34, Tobacco-cutters, Reciprocating-knife; and 35, Tobacco-cutters, Rotating-knife.
- 146—VEGETABLE CUTTERS AND CRUSHERS, subclasses 7, Cutters, Reciprocating, and 12, Cutters, Bread.
- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 34, Cutting-machines, and the subclasses thereunder.

CLASS 107—Continued.

22. **CUTTING APPARATUS, KNIFE, CIRCULAR.** Cutting machines employing one or more circular knives usually mounted on a rolling or rotating shaft or drum.

Search Classes—

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 10, Molding apparatus, Rolling; 11, Molding apparatus, Rolling, Pills; 13, Molding apparatus, Rolling, Axial; and 23, Cutting apparatus, Rotary-die.
17—BUTCHERING, subclass 19, Meat-cutters, Cylinder and block.
83—MILLS, subclass 61, Sugar and salt crushers.
131—TOBACCO, subclass 35, Tobacco-cutters, Rotating-knife.
164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 77, Cutting-machines, Traveling cutter-carriage, Roller knife.

23. **CUTTING APPARATUS, ROTARY-DIE.** Cutting-machines employing a rotary shaft or drum carrying dies adapted to cut in more than one direction on the surface of the sheet of dough.

Search Classes—

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 10, Molding apparatus, Rolling, and 22, Cutting apparatus, Knife, Circular.
83—MILLS, subclass 61, Sugar and salt crushers.

24. **CUTTING APPARATUS, RECIPROCATING-DIE.** Cutting-machines employing one or more reciprocating dies which cut at one time in more than one direction on the surface of the sheet of dough and without an internal plunger or dough-feeding means.

Search Classes—

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 5, Combined machines, Printing and cutting lozenges; 6, Combined machines, Cutting and distributing; 21, Cutting apparatus, Knife; and 28, Depositing apparatus, Valve cut-off.
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 23, Cutting, Die, Machines, Reciprocating cross-head; 24, Cutting, Die, Machines, Reciprocating cross-head, Shifting dies; 25, Cutting, Die, Machines, Reciprocating-plunger, and the subclasses thereunder.

25. **CUTTING APPARATUS, RECIPROCATING - DIE, DOUGH-FEEDING.** Cutting-machines employing reciprocating dies and provided with a device for feeding a sheet of dough to the cutters which sometimes sheets or compresses the dough.

Search Classes—

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 5, Combined machines, Printing and cutting lozenges; 6, Combined machines, Cutting and distributing; and 21, Cutting apparatus, Knife.
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 20, Cutting, Die, Machines, Work-feeding; 21, Cutting, Die, Machines, Work-feeding, Reciprocating-feeder; and 22, Cutting, Die, Machines, Work-feeding, Roller-feed.

26. **CUTTING APPARATUS, RECIPROCATING-DIE, INTERNAL PLUNGER.** Cutting-machines employing reciprocating dies having a relatively movable inside plunger or plungers for stamping or stripping the product or clearing the die. In some cases the plunger acts before the die to flatten the dough and some have two series of knives crossed at right angles for dividing dough.

Search Classes—

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 23, Cutting apparatus, Rotary-die, and 28, Depositing apparatus, Valve cut-off.
164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 33, Cutting Die, Dies, Blank-ejecting.

27. **DEPOSITING APPARATUS.** Machines for dropping soft dough, batter, or paste from a nozzle or its equivalent onto a belt, tray, pan, mold, or other device which acts to give final shape to the article, except those which cut off the material as it emerges from the nozzle by means of a valve or cut it off by a knife after it emerges and after it has been given its final shape. Usually the dough-box or the receiving device has a vertical reciprocation which acts to separate the deposited cake or candy from that in the box, or a plunger in the box is withdrawn a short distance for this purpose. Those for shaping by expressing through dies are not included.

Search Classes—

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 1, Composite cake and confection apparatus.
18—PLASTICS, subclasses 26, Molding devices, Casting, and 30, Molding devices, Chargers.

28. **DEPOSITING APPARATUS, VALVE CUT-OFF.** Depositing-machines in which a valve or its equivalent cuts off the material as it exudes from the nozzle, the valve not reciprocating transversely to the stream of dough.

Search Class—

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 52, Implements, Depositors.

29. **DEPOSITING APPARATUS, VALVE CUT-OFF, TRANSVERSELY-RECIPROCATING.** Depositing-machines in which the exuding stream of dough is cut off by a valve or knife reciprocating across the face of the nozzle—i. e., transverse to the stream of dough.

Search Class—

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 28, Depositing apparatus, Valve cut-off, for oscillating valve, and 52, Implements, Depositors.

CLASS 107—Continued.

30. **MIXERS, KNEADERS, AND BEATERS.** Machines for working, kneading, or beating dough, batter, paste, eggs, etc., not classifiable in any of the following twelve subclasses. Some include means for introducing the ingredients.

Search Classes—

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 31, Mixers, Kneaders, and beaters, Aerating; 32, Mixers, Kneaders, and beaters, Moving-receptacle, and 33, Mixers, Kneaders, and beaters, Moving-receptacle, Rotating.
17—BUTCHERING, subclass 17, Meat-cutters, Crank mechanism.
31—DAIRY, subclasses 9, Churns, Double-acting; 17, Churns, Vibrating; 22, Cheese-vats and curd-breakers; 25, Butter workers and molds; 29, Churns, Reciprocating, Crank mechanism, Multiple-dasher; 31, Churns, Reciprocating, Combined lever and crank mechanism, and 34, Churns, Reciprocating Lever mechanism, Multiple-dasher.

31. **MIXERS, KNEADERS, AND BEATERS, AERATING.** Machines for mixing, kneading, or beating, including means for introducing air or gas into the mass to aid in the mixing operation.

Search Classes—

- 31—DAIRY, subclasses 7, Churns; 37, Churns, Reciprocating, without operating mechanism, and 90, Milk-treating, Aerating.
195—ALCOHOL, subclass 30, Mashing, Apparatus, Mash-tubs, Tubular rakes.

32. **MIXERS, KNEADERS, AND BEATERS, MOVING-RECEPTACLE.** Mixers, kneaders, or beaters in which part or all of the mixing or kneading operation is performed by the movement of the receptacle which holds the material, the motion being other than rotary. Those in which the receptacle merely moves to discharge the contents for convenience in repaïring and the like are not included.

Search Class—

- 31—DAIRY, subclasses 18, Churns, Working body, and 63, Drink-mixers.

33. **MIXERS, KNEADERS, AND BEATERS, MOVING-RECEPTACLE, ROTATING.** Mixers, kneaders, or beaters in which part or all of the mixing or kneading operation is performed by the rotation of the receptacle which holds the material.

Search Classes—

- 17—BUTCHERING, subclasses 19, Meat-cutters, Cylinder and block; 17, Meat-cutters, Crank mechanism, and 25, Meat-cutters, Trip mechanism.
31—DAIRY, subclasses 7, Churns, and 18, Churns, Working body, and 25, Butter workers and molds.
62—REFRIGERATION, subclass 4, Ice-cream freezers.
83—MILLS, subclasses 45, Grinding-mills, Chasing, and 72, Mortar-mixers.

34. **MIXERS, KNEADERS, AND BEATERS, ROLLER.** Machines which mix or knead dough by means of one or more rollers. Some have a device for forcing the dough to the roller. Those that have kneading and sheeting rollers used successively in the same bearings and those that first knead and then sheet are classed in subclass 12, Molding apparatus, Rolling, Sheetting.

Search Classes—

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 10, Molding apparatus, Rolling, and 12, Molding apparatus, Rolling, Sheetting.
17—BUTCHERING, subclass 29, Meat-tenderers, Rotary.
18—PLASTICS, subclass 2, Miscellaneous apparatus, Vulcanizable gums.
31—DAIRY, subclass 25, Butter workers and molds.
83—MILLS, subclass 45, Grinding-mills, Chasing.
92—PAPER-MAKING AND FIBER LIBERATION, subclass 22, Stuff working, Beating-engines.

- MIXERS, KNEADERS, AND BEATERS, ROTARY-DASHER.** Mixers, kneaders, and beaters employing dashers which perform their function by rotating and in which no part of the mixing operation is performed by the motion of the containing-receptacle.

35. **MIXERS, KNEADERS, AND BEATERS, ROTARY-DASHER, COMPOUND-ROTATION.** Machines of the rotary-dasher type in which a compound rotation is given to the dasher or dashers—i. e., the axis on which the dasher rotates itself has a rotary motion.

Search Class—

- 195—ALCOHOL, subclass 29, Mashing, apparatus, Mash-tubs, rakes.

36. **MIXERS, KNEADERS, AND BEATERS, ROTARY-DASHER, MULTIPLE.** Machines of the rotary-dasher type employing more than one rotating dasher mounted on different shafts. Those in which a plurality of dashers are secured to the same shaft are not included.

Search Classes—

- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 35, Mixers, kneaders, and beaters, Rotary-dasher, Compound-rotation.
17—BUTCHERING, subclass 17, Meat-cutters, Double-cylinder.
31—DAIRY, subclasses 25, Butter workers and molds; 40, Churns, Rotary, Horizontal double-dasher, Concentric shafts; 41, Churns, Rotary, Horizontal double-dasher, Parallel shafts; 43, Churns, Rotary, Vertical double-dasher, Concentric shafts, and 44, Churns, Rotary, Vertical Double-dasher, Parallel shafts.
83—MILLS, subclasses 11, Grinding-mills, Rotary beaters, and 72, Mortar-mixers.

CLASS 107—Continued.

37. MIXERS, KNEADERS, AND BEATERS, ROTARY-DASHER, MULTIPLE, HAND-SUPPORTED. Devices falling under the definition of subclass 36, Mixers, kneaders, and beaters, rotary-dasher, multiple, in which the beater is adapted to be supported in part or wholly by one hand and operated by the other, chiefly egg-beaters.

Search Class—

107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 36, Mixers, kneaders, and beaters, Rotary-dasher, Multiple.

38. MIXERS, KNEADERS, AND BEATERS, ROTARY-DASHER, SINGLE. Machines of the rotary-dasher type having a single dasher rotating on a vertical or inclined shaft having secured to it one or more dashers or blades.

Search Classes—

107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 36, Mixers, kneaders, and beaters, Rotary-dasher, Multiple.

17—BUTCHERING, subclasses 20, Meat-cutters, Cylinder and concave, and 26, Meat-mixers.

31—DAIRY, subclasses 9, Churns, Double-acting; 22, Cheese-vats and curd-breakers; 38, Churns, Rotary, Diagonal-dasher, and 42, Churns, Rotary, Vertical single-dasher.

62—REFRIGERATION, subclass 4, Ice-cream freezers

83—MILLS, subclass 11, Grinding-mills, Rotary beaters, and 72, Mortar-mixers.

91—COATING, subclass 57, Mixers and stirrers.

127—SUGAR AND SALT, subclass 11, Mixers.

195—ALCOHOL, subclass 29, Mashing, Apparatus, Mash-tubs, Rakes, and 30, Mashing, Apparatus, Mash-tubs, Tubular rakes.

39. MIXERS, KNEADERS, AND BEATERS, ROTARY-DASHER, SINGLE, OSCILLATING. Devices of the rotary-dasher type in which the single dasher is necessarily caused to rotate first in one direction and then in the reverse direction. They are usually hand-supported egg-beaters.

Search Class—

31—DAIRY, subclasses 9, Churns, Double-acting, and 17, Churns, Vibrating.

40. MIXERS, KNEADERS, AND BEATERS, ROTARY-DASHER, SINGLE, HORIZONTAL. Machines of the rotary-dasher type having a single rotating horizontal shaft having secured to it one or more dashers or blades.

Search Classes—

107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 14, Molding apparatus, Die-expressing; 31, Mixers, kneaders, and beaters, Aerating, and 36, Mixers, kneaders, and beaters, Rotary-dasher, Multiple.

17—BUTCHERING, subclasses 20, Meat-cutters, Cylinder and concave, and 26, Meat-mixers.

31—DAIRY, subclasses 25, Butter workers and molds, and 38, Churns, Rotary, Diagonal-dasher.

49—GLASS, subclass 63, Batch-mixers.

83—MILLS, subclasses 11, Grinding-mills, Rotary beaters, and 72, Mortar-mixers.

91—COATING, subclass 57, Mixers and stirrers.

92—PAPER-MAKING AND FIBER LIBERATION, subclass 22, Stuff working, Beating-engine, and subclasses thereunder.

127—SUGAR AND SALT, subclass 11, Mixers.

195—ALCOHOL, subclass 26, Mashing, Apparatus, Digesters and disintegrators.

41. MIXERS, KNEADERS, AND BEATERS, ROTARY-DASHER, SINGLE HAND-SUPPORTED. Devices of the single rotary-dasher type in which the beater is adapted to be supported in part or wholly by one hand and operated by the other, chiefly egg-beaters.

Search Class—

107—BREAD, PASTRY, AND CONFECTION MAKING subclasses 37, Mixers, kneaders, and beaters, Rotary-dasher, Multiple, Hand-supported, and 39, Mixers, kneaders, and beaters, Rotary dasher, Single, Oscillating.

42. MIXERS, KNEADERS, AND BEATERS, SINGLE, RECIPROCATING-DASHER. Devices for beating eggs, etc., in which a single dasher is reciprocated in a straight line, usually by the direct application of a reciprocating motion to the dasher-shaft. Usually consist merely of a cylinder and dasher.

Search Classes—

107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 31, Mixers, kneaders, and beaters, Aerating.

31—DAIRY, subclasses 9, Churns, Double-acting; 30, Churns, Reciprocating, Crank mechanism, Single-dasher; 31, Churns, Reciprocating, Combined lever and crank mechanism; 32, Churns, Reciprocating, Foot mechanism; 33, Churns, Reciprocating, Hand and foot mechanism; 35, Churns, Reciprocating, Lever mechanism, Single-dasher; 36, Churns, Reciprocating, Rocking seat mechanism; and 37, Churns, Without operating mechanism.

43. SIZING AND SALTING APPARATUS. Apparatus for applying salt to crackers, pretzels, etc., usually before baking, in combination or not with apparatus for applying sizing in vapor or other form prior to the salting to make the salt stick and give a glazed appearance to the product.

44. CLEANING APPARATUS. Apparatus for cleaning confectionery, sheets of dough, etc., chiefly removing flour, starch, dust, etc., by brushing, steaming, etc.

45. STACKING AND PACKING APPARATUS. Apparatus for assembling, packing, and stacking crackers, lozenges, and other articles in this art.

Search Classes—

100—PRESSES, subclass 59, Packing, Articles.

127—SUGAR AND SALT, subclass 6, Cube sugar.

CLASS 107—Continued.

46. PASTRY-BOARDS. Simple and composite boards especially adapted for rolling and kneading dough and paste, combined or not with any implements, such as bread-trays, rolling-pins, etc. Includes pill-tiles.

Search Class—

45—FURNITURE, subclasses 16, Kitchen-cabinets, and 17, Tables, Kitchen.

47. IMPLEMENTS. Hand-operated and hand-directed implements for use in this art, except those excluded by the definition of the class and which are not classifiable in any of the following six subclasses.

48. IMPLEMENTS, ICE-CREAM DISHERS. Hand operated and directed implements for dishing ice-cream and other ices. They usually are adapted to cut into the mass of cream, remove a measured amount, mold it, and discharge it.

Search Class—

31—DAIRY, subclasses 65, Butter, Cutters, and 68, Cheese, Cutters.

49. IMPLEMENTS, PIE CRIMPERS AND TRIMMERS. Hand operated and directed implements for crimping and trimming pies involving one or more cutting or trimming knives combined with one or more marking, crimping, or molding devices, but no other implements.

50. IMPLEMENTS, ROLLING-PINS. Rolling-pins combined or not with other implements which are contained within them.

Search Class—

107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 49, Implements, Pie crimpers and trimmers.

51. IMPLEMENTS, CUTTERS. Hand operated and directed implements for cutting with or without movable ejectors or docking, pricking, or molding plungers inside the cutters.

Note.—Cutting-dies intended to be placed in a press or other machine are classified in subclass 20, Cutting apparatus, this class.

Search Classes—

107—BREAD, PASTRY AND CONFECTION MAKING, subclasses 20, Cutting apparatus; 49, Implements, Pie crimpers and trimmers; and 50, Implements, Rolling-pins.

17—BUTCHERING, subclasses 22, Meat-cutters, Hand, and 27, Meat-tenderers, Hand.

30—CUTLERY, subclass 9, Knives.

31—DAIRY, subclasses 65, Butter, Cutters, and 68, Cheese, Cutters.

131—TOBACCO, subclass 49, Cigar-makers' implements, Wrapper-cutters.

164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 80, Cutting, implements, and the subclasses thereunder.

52. IMPLEMENTS, DEPOSITORS. Hand operated and directed receptacles for dropping soft dough, batter, paste, etc., into pans or molds; custard, etc., into pies; frosting or ornamentations onto cakes and confectionery, etc. Does not include those which drop two or more kinds simultaneously.

Search Classes—

107—BREAD, PASTRY AND CONFECTION MAKING, subclasses 27, Depositing apparatus; 28, Depositing apparatus, Valve cut-off; and 29, Depositing apparatus, Valve cut-off, Transversely-reciprocating.

221—DISPENSING-CANS, appropriate subclasses.

53. IMPLEMENTS, MIXERS, KNEADERS, AND BEATERS. Implements adapted to be entirely supported, directed, and operated by a single hand for mixing, kneading, or beating dough, batter, paste, eggs, and the like.

Search Classes—

17—BUTCHERING, subclass 27, Meat-tenderers, Hand.

30—CUTLERY, subclass 22, Forks and spoons.

31—DAIRY, subclass 63, Drink-mixers.

146—VEGETABLE CUTTERS AND CRUSHERS, subclass 15, Crushers and graters, Reciprocating.

54. PROCESSES. Processes for use in this art.

Search Class—

15—PLASTICS, subclasses 48, Processes, Miscellaneous, and 55, Processes, Molding.

55. BAKERS' OVENS. Ovens usually of brick construction and designed for commercial purposes or baking on a large scale and not adapted for household use.

56. BAKERS' OVENS, CHARGING AND REMOVING DEVICES. Trays that are designed to support the articles to be baked and means for placing and withdrawing them from the baking-chamber. These devices are usually designated "draw-plates."

57. BAKERS' OVENS, CHARGING AND REMOVING DEVICES, ENDLESS-CARRIER. Ovens that are provided with article placing-in and removing devices that are in the form of endless belts or carriers.

Note.—This subclass includes all bakers' ovens that are provided with this form of device other than those that are circular or rotary in form, and search should, therefore, be made in oven subclasses for oven structures.

Search Class—

34—DRIERS, subclass 12, Endless carrier.

58. BAKERS' OVENS, CHARGING AND REMOVING DEVICES, ENDLESS-CARRIER, AUTOMATIC PANS OR FORMS. Endless-carriers that are provided with covered baking pans or forms and automatic means for opening and closing the pans or forms during operation.

CLASS 107—Continued.**Search Classes—**

- 107—BREAD, PASTRY AND CONFECTION MAKING**, subclass 66, Bakers' ovens, Forming and baking plates.
53—DOMESTIC COOKING VESSELS, subclass 10, Waffle-irons.

59. **BAKERS' OVENS, CHARGING AND REMOVING DEVICES, REEL.** Ovens known as "reel-ovens" in which the pans or trays for holding the articles to be baked are mounted on a revolving reel arranged in the baking-chamber. Includes stop mechanism and means for placing in or removing from the trays the articles to be baked applicable to this type of oven.

Note.—Search should be made in oven subclasses for the form of oven *per se*, also in appropriate subclasses for the form of tray or support.

60. **BAKERS' OVENS, CHARGING AND REMOVING DEVICES, ROTARY HEARTH.** Ovens known as "rotary," in which the pans or tray-supporting means rotate or travel in a horizontal circular direction. Rotating belts or carriers are included.

Note.—Oven-structure features should be searched in appropriate subclasses.

61. **BAKERS' OVENS, WAGON-OVENS.** Ovens that are mounted upon wagon-frames and are designed to be transported from place to place.

Search Class—

- 126—STOVES AND FURNACES**, subclass 268, Heaters, Lunch-Wagon.

CLASS 107—Continued.

62. **BAKERS' OVENS, KNOCKDOWN OR SEPARABLE.** Ovens that are easily dissembled and put together and usually termed "portable." This subclass is only designed to include ovens of large capacity for commercial purposes and not to include the ordinary domestic portable oven designed for household use.

63. **BAKERS' OVENS, FLUID-CIRCUIT OR INDIRECT HEATING.** Ovens wherein the specific or direct means for heating the same is a fluid-circuit, such as steam, oil, air, or analogous substance.

64. **BAKERS' OVENS, ATTACHMENTS.** Devices that are designed to be attached to bakers' ovens without reference to the form or structure of the oven. This subclass also includes devices for introducing steam into the oven.

65. **BAKERS' OVENS, DOORS.** Forms or types of doors and operating means that are specially applicable to bakers' ovens.

Search Class—

- 110—FURNACES**, subclass 173, Doors, and reference-notes thereunder.

66. **BAKERS' OVENS, FORMING AND BAKING PLATES.** Two-part hinged plate and forming devices designed for the baking of wafers and similar articles and manual means for opening and closing the plates.

Search Classes—

- 107—BREAD, PASTRY AND CONFECTION MAKING**, subclass 58, Bakers' ovens, Charging and removing devices, Endless-carrier, Automatic pans or forms.

- 53—DOMESTIC COOKING VESSELS**, subclass 10, Waffle-irons.

67. **BAKERS' OVENS, BAKERS' PEEL.** Devices designed for the placing in or the removal of the articles from the oven.



CLASS 108.—ROOFS.

DEFINITIONS.

Class.

Includes all roof construction and all roof-coverings except roofing fabrics and compositions of matter to be spread on roofs.

Subclasses.

1. MISCELLANEOUS. Roofs not otherwise classifiable; also, miscellaneous attachments to roofs.
2. ADJUSTABLE. Roofs which may be raised or lowered on standards and roofs made in sections which may be shifted in position to permit free circulation of air.
3. PORTABLE. Roofs designed for temporary use and adapted to be readily carried from place to place.
4. OBSERVATORY-DOMES. The structure of domes of glass or other material for observatories and trucks for supporting such domes.
5. CAR. Roofs designed for use on cars exclusively and of types not shown in roofs for buildings.
6. COMPOSITE. Roofs composed of one or more layers of material at least one of which must consist of a plastic substance or a plastic in combination with some other material.
- 6.5. COMPOSITE, FIREPROOF. Roofs so constructed that they are fireproof, wherein the invention resides in such construction.
7. FABRIC. Fabric-covered roofs, including joints for the strips of fabric and methods of uniting the fabric and undersheathing of the roof.
Search Class—
154—LAMINATED FABRICS AND ANALOGOUS MANUFACTURES for miscellaneous laminated fabrics that may be adapted for roofing material.
8. SLATE AND SHINGLE. Various forms of shingles of wood, slates, and artificial shingles and slates.
9. SLATE AND SHINGLE, LAYING. Methods of laying slate and shingle roofs and fastening devices for slates and shingles.
Search Class—
108—ROOFS, subclasses 10, Tile, and 17, Metallic, Shingle.
10. TILE. Structure of roofing-tiles and methods of laying tiles on roofs, including fasteners for tiles.
Search Classes—
108—ROOFS, subclass 9, Slate and Shingle Laying; 12, Lap Joints, and 17, Metallic, Shingle.
72—MASONRY AND CONCRETE STRUCTURES, subclass 17, Walls, Faced, and subclasses thereunder.
11. THATCH. Roofs composed of wisps of straw or grass.
12. LAP-JOINT. Roofs composed of wooden boards, in which the joints are protected by inside or outside battens or in which the joints are formed by the overlapping of boards forming the roof.
Search Classes—
108—ROOFS, subclass 10, Tile.
20—WOODEN BUILDINGS, subclass 6, Floors, miscellaneous, and 5, Weather-boarding.
13. METALLIC, MISCELLANEOUS. Sheet-metal roofs not clearly classifiable in other subclasses.
Search Class—
189—METALLIC BUILDING STRUCTURES, subclass 85, Metal sheathing, and subclasses thereunder.
14. CAR, FABRIC-LINED. An outer sheathing of wood covers an inner roof of cloth, rubber, roofing-felt, or other fabric.

CLASS 108—Continued.

15. CAR, METAL-LINED. An outer sheathing of wood covers an inner roof of sheet metal.
16. SKYLIGHTS. Frames, glass bars, combined sheet-metal gutters and bars; arrangements for ventilating without admitting rain, and other structures pertaining to roof-skylights.
Note.—Metal plates with refracting or reflecting lights inserted are classified under class 94, PAVING, subclass 7, Vault-covers, and class 88 OPTICS, subclass 59, Building lights, Vault. Glass plates for greenhouse roofs or skylights and devices for fastening the plates to the bars are found under class 108, ROOFS, subclass 10, Tile.
17. METALLIC, SHINGLE. Metallic sheets or plates prepared for laying like shingles and requiring no further manipulation to form joints.
18. METALLIC, RIB-SEAM. Seams formed along ribs in the roof by folding the roofing-sheets over an underlying batten or by bending the edges of the sheets into ribs and laying one over the other.
19. METALLIC, RIB-SEAM, CAPPED. Seams formed by upturning the margins of the sheets, bending their edges outward, covering them with a broad cap, and flattening the seams, or by placing a cap over a rib-seam of the ordinary type instead of lapping the sheets.
20. METALLIC, STANDING-SEAM. The upturned margins of the sheets are brought together and the edges folded over to form the joints; also, the anchors and cleats for fastening the sheets.
21. METALLIC, STANDING-SEAM, CAPPED. The upturned margins of the sheets are covered by a cap clamped over them instead of being merely folded. The seams are not flattened.
22. METALLIC, INTERLOCKING LAP-SEAM. The roofing-sheets are folded at the edge, so as to interlock and form a flat seam.
23. TRUSSES. Frames of wood or metal for supporting roofs.
Search Class—
14—BRIDGES, subclass 24, Arch, and subclasses thereunder; subclass 3, Truss, and subclasses thereunder.
24. RIDGES. Saddle-pieces and ornamental crests for the ridges or hips of roofs.
25. VALLEYS. Constructions for forming a gutter between two oppositely-sloping portions of a roof and forming close joints therewith.
26. FLASHINGS. Constructions for making a close joint between the roof and structures passing through or above the roof.
27. FENDERS. Devices attached to the surface of the roof to prevent snow and ice from sliding.
28. EAVES-TROUGHS. Eaves-gutters of different materials, whether formed integral with the roof or suspended at its edge.
29. EAVES-TROUGHS, HANGERS. All supporting devices for eaves-troughs, even though one of the complementary parts of the supporting device be secured to the trough.
Search class—
248—SUPPORTS, subclass 31, Pipe and cable hangers, for supports for spouts, etc.
30. EAVES-TROUGHS, STRAINERS. Screens in or over eaves-troughs to exclude leaves or trash from eaves-troughs or conductor-pipes.
31. SKYLIGHTS, OPERATING DEVICES. Devices for opening, closing, and securing the skylight or its cover.
Search Class—
16—BUILDERS' HARDWARE, subclass 28, Transom Lifters.

CLASS 110.—FURNACES.**DEFINITIONS.***Class.*

This class relates to the broad art of combustion of solid fuel and also liquid or gaseous fuel when it is burned as an auxiliary fuel. It also contains patents for furnaces that may be readily converted from a solid-fuel burner to a liquid or gaseous fuel burner when such construction is claimed. Under the term "solid fuel" is included everything used as fuel except liquid and gaseous fuel. But this class, although being the broadest class in the furnace art, is strictly limited to the furnace structure itself, together with means for feeding solid fuel to such furnace, and does not contain patents with claims to combinations of furnaces with the structure of the thing to be heated. For example, patents with claims to a furnace structure having features that especially adapt it for use in metallurgical processes are classified in class 75, METALLURGY; but if the claims in such patents relate only to the combustion or to the feeding of the fuel they are classified in class 110, FURNACES, although a metallurgical furnace structure may be shown and described. Patents claiming structure of a furnace combined with boiler structure in the same claim or having claims to the boiler alone and also claims to the furnace alone are classified in class 122, LIQUID HEATERS AND VAPORIZERS, and the claims to the furnace cross-referenced into their proper subclass in class 110, FURNACES. In class 110, FURNACES, are classified patents for furnaces designed to burn wet fuel—such as bagasse, garbage, sewage, and all refuse—unless such furnace is of a character that pertains to a certain art. For example, patents for furnaces designed to burn offal for the making of fertilizers, such offal being placed in a closed retort where the flame and heat from the fire do not come into contact with the offal, are classified in class 71, FERTILIZERS; but if the offal is burned in an open retort or heated in some part of the furnace and dumped upon the fire and burned, patents for such devices are classified in class 110, FURNACES, although it be the intention of the inventor to make use of the residuum for fertilizers. Patents for furnaces for burning garbage and other refuse, of a structure designed for being used upon a domestic stove or furnace, are classified in class 126, STOVES AND FURNACES. Patents for furnaces for converting refuse into oil or glue are classified in class 87, OILS, FATS, AND GLUE. This class does not include furnaces for ordinary domestic purposes, like cooking and heating stoves, fireplaces, hot-air furnaces, etc., that are classified in class 126, STOVES AND FURNACES.

Patents for processes are classified with the apparatus shown and described. Where no apparatus is shown, such patents are placed in subclass 1. Furnace structure, unless the process would naturally pertain to some other subclass.

Although class 110, FURNACES, is made the broad class of combustion generally and contains patents for specific parts of such furnaces as are classified here—such as doors, dead-plates, bridge-walls, etc.—yet an exception is made in patents for grates. Class 126, STOVES AND FURNACES, contains patents for grates broadly, and only such patents for grates are classified in class 110, FURNACES, as are hollow and designed for heating air as it passes through the grate for feeding the heated air to the fire and for keeping the grate cool, or such grates as are designed for progressively moving the fuel along the grate. Patents for hollow grates through which water circulates, whether such circulation is connected with the boiler or not, are classified in class 122, LIQUID HEATERS AND VAPORIZERS. Class 110, FURNACES, contains patents for furnace-doors in general, unless the construction is such as to be especially adapted to a special art. Doors of a light character designed for domestic stoves and furnaces are found in class 126, STOVES AND FURNACES. In class 110, FURNACES, are classified devices for regulating the draft of the furnace. Patents for dampers for all kinds of furnaces are classified in class 126, STOVES AND FURNACES; but patents involving claims to combinations of feeding air or steam with the damper in the stack are classified in class 110, FURNACES; but the mechanism for operating a damper automatically is classified in class 236, DAMPERS, AUTOMATIC. Furnaces for burning liquid and gaseous fuel are classified in class 158, LIQUID AND GASEOUS FUEL BURNERS, or in class 126, STOVES AND FURNACES. Mechanism for opening or closing furnace-doors in combination with the door structure or that is of a character especially adapting it to operate a furnace-door is classified in class 110, FURNACES, subclass 176, Doors, Operators; but if the mechanism is generally capable of opening any door or gate it is classified in class 39, FENCES, subclass 5, Gates. Devices for heating surfaces, whether used for melting snow and ice, thawing earth for placer mining, burning weeds or stubble, destroying microbes in the soil or heating pavements when either fluid fuel or solid fuel furnace or burner is employed are classified in class 126, STOVES AND FURNACES, subclasses 271.1, Heaters, Surface, and the minor subclasses thereunder. Devices for thawing pipes, including many furnaces, are found in class 137, WATER DISTRIBUTION, subclass 72, Mains and pipes, Thawing. The following classes are also noted in addition to the above citations for furnaces used in special arts: 17, BUTCHERING, subclass 7, Scalding and singeing; 25, PLASTIC BLOCK AND EARTH-WARE APPARATUS, subclass 132, Kilns; 34, DRIERS, subclasses 18, Heaters, and 19, Houses and kilns; 37, EXCAVATING, subclass 35, Snow road machines, for furnaces for making snow roads; 48, GAS HEATING AND ILLUMINATING; 72, MASONRY, subclasses 20, Stone and brick setting, and 27, Building-blocks, for furnace structure; 126, STOVES AND FURNACES, subclass 343.5, Melting furnaces, for tanks and miscellaneous devices for melting snow; 127, SUGAR AND SALT, subclasses 9, Evaporating-pans, and 18, Vacuum-pans; 158, LIQUID AND GASEOUS FUEL BURNERS, subclass 1, Furnaces; 196, MINERAL OILS, subclass 9, Apparatus, Stills, Furnaces and flues; 202, CHARCOAL AND COKE.

CLASS 110—Continued.*Subclasses.*

1. FURNACE STRUCTURE. Miscellaneous types of furnaces not otherwise classifiable and all parts of furnace structure not properly allied to the structure defined in the subclass types. This is also the general miscellaneous division of class 110, FURNACES.

2. FURNACE STRUCTURE, AUTOMOBILE. Furnaces for automobiles that burn hard fuel, such as coal or wood, together with draft-regulating devices whose structure especially adapts them to automobile-furnaces.

3. FURNACE STRUCTURE, CREMATION. Furnaces designed for the burning of bodies.

4. FURNACE STRUCTURE, HORIZONTAL CYLINDRICAL BOILER. Furnaces whose structure claimed involves the construction of the furnace walls above a horizontal plane passed through the center of the boiler, as well as that part below the center.

Note.—For structures of furnaces containing horizontal cylindrical boilers where the claims are on the lower part, search in this class, subclasses 23, Furnace structure, Multiple series; 28, Furnace structure, Fine fuel burned in suspension; 51, Furnace structure, Smoke and gas return, Before passing boiler-flues; 52, Furnace structure, Smoke and gas return, Before passing boiler-flues, From fire-box; 59, Furnace structure, Feeding air and steam, Horizontal base, and 82, Furnace structure, Horizontal base.

5. FURNACE STRUCTURE, STRAW BURNERS AND FEEDERS. Furnaces specially adapted for burning straw and the feeding mechanism thereof.

Search Class—

126—STOVES AND FURNACES, subclasses 222, Trash burners, Cooking stoves; 223, Trash burners, Cooking stoves, Feeding attachments; 224, Trash burners, Domestic-refuse burners; and 225, Trash burners, Heating-stoves.

6. FURNACE STRUCTURE, STRAW BURNERS AND FEEDERS, FIRE-BOX, EXTERIOR, DETACHABLE. Includes fire-boxes for straw-burning furnaces that are exterior to the main furnace structure and capable of being readily separated or detached therefrom.

Search Classes—

110—FURNACES, subclass 88, Furnace structure, Fire-box, Exterior, Detachable.

126—STOVES AND FURNACES, subclasses 222, Trash burners, Cooking stoves; 223, Trash burners, Cooking stoves, Feeding attachments; 224, Trash burners, Domestic-refuse burners; and 225, Trash burners, Heating-stoves.

7. FURNACE STRUCTURE, WET-FUEL. Furnaces specially adapted to burn wet fuels, like garbage and sewage and bagasse.

Note.—Most of the bagasse-burners are placed in this main subclass 7; but if the structure is such as to be common to garbage they are placed under the garbage and sewage subclasses, although the patent may allege that it is intended only for bagasse. If the patent states that the furnace is to be used for bagasse, but there is no structure shown to adapt it especially for bagasse, but which might be used with equal advantage for coal or wood, such patent is classified structurally in its proper subclass like any other furnace. The same remark is applicable to tanbark and sawdust.

Search Class—

110—FURNACES, subclass 18, Furnace structure, Refuse, and the subclasses thereunder.

8. FURNACE STRUCTURE, WET-FUEL, GARBAGE AND SEWAGE. Furnaces especially adapted for burning garbage and sewage.

Search Classes—

71—FERTILIZERS, subclasses 1, Apparatus, and 8, Sewage and night-soil.

87—OILS, FATS, AND GLUE, subclass 13, Rendering.

9. FURNACE STRUCTURE, WET-FUEL, GARBAGE AND SEWAGE, DRY CLOSETS. Devices for burning fecal matter when this device is combined with a dry closet. Garbage may be thrown in and burned with it.

Note.—Dry closets having a fire for simply drying fecal matter are classified in class 4, BATHS AND CLOSETS, subclass 20, Dry closets.

10. FURNACE STRUCTURE, WET-FUEL, GARBAGE AND SEWAGE, STEAM-BOILER. Garbage and sewage furnaces that make use of the heat generated to heat a steam-boiler.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 2, Plants, Garbage.

11. FURNACE STRUCTURE, WET-FUEL, GARBAGE AND SEWAGE, CLOSED RETORT. Furnaces for burning garbage and sewage in which the garbage is placed in a closed retort over the fire and then incinerated. This retort may or may not have means for dumping its contents on the fire.

CLASS 110—Continued.

Search Classes—

- 48—GAS, HEATING AND ILLUMINATING, subclass 119, Retorts, and the subclasses thereunder.
 71—FERTILIZERS, subclasses 1, Apparatus, and 8, Sewage and night-soil.
 87—OILS, FATS, AND GLUE, subclass 13, Rendering.
 92—PAPER MAKING AND FIBER LIBERATION, subclass 7, Stock treatment, Digestive, and subclasses thereunder.
 202—CHARCOAL AND COKE, subclasses 3, Charcoal, Retorts, and 9, Retort-ovens.
 203—AMMONIA, WATER, AND WOOD DISTILLATION, subclass 6, Wood.

12. FURNACE STRUCTURE, WET-FUEL, GARBAGE AND SEWAGE, REVERBERATORY PLATFORM. Garbage-burners in which the garbage rests on a platform over which pass the flames of the furnace, and generally the coked garbage is raked off into the fire and burned.

Search Class—

- 110—FURNACES, subclass 9, Furnace structure, Wet-fuel, Garbage and sewage, Dry closets.

13. FURNACE STRUCTURE, WET-FUEL, GARBAGE AND SEWAGE, ROTARY GRATE, VERTICAL AXIS. Garbage-burners with rotary grates or rotary supports having a vertical axis for the grate or support.

Search Classes—

- 110—FURNACES, subclass 36, Furnace structure, Progressive-feed, Grate, Rotary, Vertical axis.
 126—STOVES AND FURNACES, subclasses 170, Grates, Oscillatory, Vertical axis; 171, Grates, Oscillatory, Vertical axis, Dumping section; 172, Grates, Oscillatory Vertical axis, Sliding section; 182, Grates, Rotary, Vertical axis.

14. FURNACE STRUCTURE, WET-FUEL, GARBAGE AND SEWAGE, ROTARY RETORT. Garbage-burners where the garbage is fed into a rotary retort and the heat being applied either as a jet of oil or pulverized coal to the inside of the retort or the heat being applied to the outside of the retort from a furnace, the gases passing either inside or outside the retort and the coked products of the garbage passing to the fire.

Search Classes—

- 71—FERTILIZERS, subclass 1, Apparatus, for garbage-incinerators having a rotary retort, the heat being applied to the outside of the retort and the garbage never coming into contact with the flame or combustible gases, but the garbage passing and being finally delivered outside the furnace.
 34—DRIERS, subclasses 5, Cylinder, Internal, Rotary horizontal, and 6, Cylinder, Internal, Rotary inclined, and 222, HYDRAULIC CEMENT AND LIME, subclass 7, Kilns, Rotary, for general structure of rotary cylinders.

15. FURNACE STRUCTURE, WET-FUEL, GARBAGE AND SEWAGE, DRYING-CONVEYER. Furnaces with some form of carrier to convey the fuel to the furnace and arranged so that the heat of the furnace will dry the fuel as it travels toward the fire.

Note.—If a furnace structure is shown that would serve the purpose for any kind of wet fuel with a drying-carrier, it is placed here.

Search Classes—

- 110—FURNACES, subclasses 43, Furnace structure, Progressive-feed, Grate, Chain, Bridge-wall feed; 107, Fuel-feeders, Bridge-wall; 111, Fuel-feeders, Spreader, Carrier, and 112, Fuel-feeders, Spreader, Carrier, Door.
 34—DRIERS, subclasses 11, Elevator, and 12, Endless carrier.

16. FURNACE STRUCTURE, WET-FUEL, GARBAGE AND SEWAGE, UNDERFEED. Devices for feeding the garbage to the furnace from underneath the fire-box.

Search Class—

- 110—FURNACES, subclass 44, Furnace structure, Progressive-feed, Underfeed.

17. FURNACE STRUCTURE, WET-FUEL, FUEL-SUPPORT ABOVE GRATE. Devices for supporting fuel above the grate, so the air can better circulate through the fuel.

18. FURNACE STRUCTURE, REFUSE. Furnaces adapted for burning miscellaneous refuse not otherwise classified.

Note.—Furnaces whose structure is such that they are capable of burning any common fuel are classified in their proper structural subclasses, although it may be stated that they are for burning refuse. Furnaces for burning garbage, bagasse, or other wet fuel are classified in wet-fuel furnaces, and the proper subclasses thereunder.

Search Class—

- 110—FURNACES, subclass 7, Furnace structure, Wet-fuel, and the subclasses thereunder.

19. FURNACE STRUCTURE, REFUSE, BRUSH, PORTABLE. Furnaces of such a structure that one or two men may drag or carry them for the purpose of burning brush therein.

20. FURNACE STRUCTURE, REFUSE, STUBBLE. Furnaces for burning grass and the stubble of grass or grain.

Search Classes—

- 126—STOVES AND FURNACES, subclasses 271.1, Heaters, Surface; 271.2, Heaters, Surface, Fluid fuel; 271.3, Heaters, Surface, Solid fuel; for stubble burners, melters for ice and snow, thawing earth furnaces and pavement heaters.
 137—WATER DISTRIBUTION, subclass 72, Mains and pipes, Thawing.

21. FURNACE STRUCTURE, REFUSE, STUMP. Devices especially adapted for burning stumps of trees.

Note.—Generally the furnace is in the form of a hood inclosing the stump.

CLASS 110—Continued.

Search Class—

- 126—STOVES AND FURNACES, subclasses 271.2, Heaters, Surface, Fluid fuel; 271.3, Heaters, Surface, Solid fuel, for furnaces for thawing frozen earth.

22. FURNACE STRUCTURE, GAS OR OIL AND SOLID FUEL. Inventions relating to the burning of solid fuel in combination with liquid or gaseous fuel. Patents containing claims to a furnace that may be convertible from a solid-fuel burner to a liquid or gaseous fuel burner are also classified herein.

Note.—Furnaces that burn wet fuel, like garbage and sewage, bagasse, etc., in combination with liquid or gaseous fuel are classified in their proper subclasses under subclass 7, Furnace structure, Wet-fuel.

Note.—Patents having claims only to a furnace for burning liquid or gaseous fuel are classified in class 158, LIQUID AND GASEOUS FUEL BURNERS, although such patents may show and describe a convertible furnace.

Search Classes—

- 126—STOVES AND FURNACES, subclasses 99, Hot air furnaces; 36, Stoves, Cooking, Liquid or gaseous fuel, Combined coal and gas.

- 158—LIQUID AND GASEOUS FUEL BURNERS, subclass 1, Furnaces, and the subclasses thereunder.

23. FURNACE STRUCTURE, MULTIPLE SERIES. Furnaces having more than one fire-box, the gases from one fire being passed successively through or over the fire in the other fire-boxes. These fire-boxes may or may not be in compact relation in one structure. Also furnaces with one fire-box provided with means for controlling the draft through different parts of the grate, as in the case where there are two separate ash-pits, the fuel being pushed from one section to the other and the gases from the new fuel being consumed as they pass over the coked fuel on the other section.

Note.—For similar function, see in this class, subclasses 12, Furnace structure, Wet-fuel, Garbage and sewage, Reverberatory platform; 25, Furnace structure, Coking, Gas passing under grate; 26, Furnace structure, Double fire-box, Alternate smoke-return, Over fire, and 27, Furnace structure, Double fire-box, Alternate smoke-return, Under fire.

24. FURNACE STRUCTURE, COKING. Furnaces having a special repository for fuel for eliminating the combustible gases and burning them before the coked fuel is fed upon the fire.

Note.—For the distinction between this subclass and subclass 31, Furnace structure, Gas-producer, see note under the latter subclass.

This subclass is closely allied to subclass 29, Furnace structure, Magazine, herein; but the distinction drawn between the magazine type of furnaces and coking is this: A magazine-furnace has a receptacle into which coal or other fuel is placed, with a conduit leading to the fire-box in such a direction and of such capacity that the fuel will fall by gravity and be fed to the fire, while in the coking-furnaces there is a repository or a retort for fuel and some means must be used to empty the retort other than gravity, although if there is a magazine, retort, or other repository for fuel that would allow the fuel to be fed to the fire save for a gate or valve it is placed in coking.

Search Classes—

- 110—FURNACES, subclass 7, Furnace structure, Wet-fuel, and the subclasses thereunder; also subclasses 29, Furnace structure, Magazine; 30, Furnace structure, Magazine, Cage-grate; 65, Furnace structure, Feeding air and steam, Fire-box, Drop-arch; 93, Furnace structure, Fire-box, Drop-arch, and 107, Fuel-feeders, Bridge-wall; and subclasses 28, Furnace structure, Fine fuel burned in suspension, and 104, Fuel-feeders, Blower, for devices for heating fine fuel as it passes through a conduit.

- 122—LIQUID HEATERS AND VAPORIZERS, subclass 66, Fire tube, Horizontal, Drop water firebox, Water coking chamber.
 202—CHARCOAL AND COKE, generally.

25. FURNACE STRUCTURE, COKING, GAS PASSING UNDER GRATE. Furnaces with a retort near the fire-box, the distilled gases passing under and through the fire.

Search Class—

- 110—FURNACES, subclass 29, Furnace structure, Magazine.

26. FURNACE STRUCTURE, DOUBLE FIRE-BOX, ALTERNATE SMOKE-RETURN, OVER FIRE. Furnaces with two fire-boxes designed to be fired alternately, the smoke from the newly-fired furnace being passed over the glowing fire in the other furnace.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 57, Fire-tube, Horizontal, Double water fire-box, Alternate smoke return; 60, Fire-tube, Horizontal, Drop water fire-box, Double, Alternate smoke return.

27. FURNACE STRUCTURE, DOUBLE FIRE-BOX, ALTERNATE SMOKE-RETURN, UNDER FIRE. Furnaces with two fire-boxes designed to be alternately fired, the smoke from the newly-fired furnace being passed under and through the fire of the glowing coke in the other furnace.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 57, Fire-tube, Horizontal, Double water fire-box, Alternate smoke return; 60, Fire-tube, Horizontal, Drop water fire-box, Double, Alternate smoke return.

28. FURNACE STRUCTURE, FINE FUEL BURNED IN SUSPENSION. Furnaces designed to burn powdered fuel blown into the furnace, the burning taking place before the fuel falls to the bottom of the combustion-chamber. In this subclass are placed patents containing both claims to the feed-

CLASS 110—Continued.

ing mechanism and the structure of the furnace, the feeding-mechanism claims being cross-referenced into their appropriate subclass. Also patents for furnaces that have a bed of solid fuel on the grate in connection with claims to fine fuel burned in suspension.

Search Classes—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 1, Furnaces, and the subclasses thereunder.

222—HYDRAULIC CEMENT AND LIME, subclass 7, Kilns, Rotary.

29. FURNACE STRUCTURE, MAGAZINE. Furnaces having a receptacle designed to be filled with fuel, such receptacle being connected with a conduit leading to the fire-box, the fuel settling down or passing through such conduit gradually as the fuel is burned out from underneath said conduit.

Note.—This subclass is closely allied to subclasses 24, Furnace structure, Coking, and 25, Furnace structure, Coking, Gas passing under grate, which should be searched.

Search Class—

110—FURNACES, subclasses 32, Furnace structure, Progressive-feed; 65, Furnace structure, Feeding air and steam, Fire-box, Drop-arch; 93, Furnace structure, Fire-box, Drop-arch, and 118, Fuel-feeders, Vertical-drop.

30. FURNACE STRUCTURE, MAGAZINE, CAGE-GRATE. Furnaces with a magazine the lower part of which has perforations or bars on opposite sides, the air entering on one side and the flames passing out on the other side.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 373, Water grate, Cage.

31. FURNACE STRUCTURE, GAS-PRODUCER. Furnaces whose structure is such that but a very small part of the fuel is oxidized in the fire-box, but the fuel is converted into a gas, and this gas is burned mainly outside the fire-box by supplying air thereto.

Note.—This subclass is distinguished from the subclasses of coking-furnaces (24 and 25) in that the coking-furnace has a retort or open support in or closely communicating with the fire-box where new fuel is placed, and the gases from the fuel distill into the fire-box and are mainly consumed therein over the glowing fire or are consumed by being passed through the glowing fire, while in the gas-producer type the whole fire-box serves as a fuel-retort and most of the gas is consumed outside the fire-box.

When the gas is not burned in connection with its production, patents with claims to a gas-producer are classified in class 48, GAS, HEATING AND ILLUMINATING.

When the thing to be heated receives a substantial amount of heat from the producer before the main body of the gas is burned, patents with claims to the construction of the producer are classified in this class, subclass 31, Furnace structure, Gas-producer.

But if a gas-producer is claimed in combination with the burning of the gas at such a distance that no appreciable amount of heat is obtained from the producer to the thing to be heated—a boiler, for instance—then such a patent would be classified in class 158, LIQUID AND GASEOUS FUEL BURNERS.

If patents claim the construction of the boiler or a boiler is claimed intimately connected with the producer, then such patent will be classified in class 122, LIQUID HEATERS AND VAPORIZERS, subclass 5, Gas producer.

The order of superiority is, then, as follows: class 122, LIQUID HEATERS AND VAPORIZERS; class 110, FURNACES; class 158, LIQUID AND GASEOUS FUEL BURNERS, and class 48, GAS, HEATING AND ILLUMINATING.

Search Classes—

48—GAS, HEATING AND ILLUMINATING, subclass 61, Generators, and appropriate subclasses thereunder for the type of producer desired.

122—LIQUID HEATERS AND VAPORIZERS, subclass 5, Gas-producer.

158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 6, Furnaces, Liquid-fuel, Retort, Gas-making, and 7, Furnaces, Gas.

32. FURNACE STRUCTURE, PROGRESSIVE-FEED. Furnaces having mechanism for continuously feeding the fuel to the furnace and along the grate, whether the grate be stationary or movable, horizontal or inclined.

Note.—The mechanism of the grate for progressively feeding the fuel along the grate is classified in the appropriate subclasses under subclass 33, Furnace structure, Progressive-feed, Grate, in this class.

Search Classes—

110—FURNACES, subclasses 24, Furnace structure, Coking; 25, Furnace structure, Coking, Gas passing under grate, and 29, Furnace structure, Magazine.

122—LIQUID HEATERS AND VAPORIZERS, subclass 376, Water grate, Progressive feed.

33. FURNACE STRUCTURE, PROGRESSIVE-FEED, GRATE. Furnaces where the fuel is fed along by the movement of the grate.

34. FURNACE STRUCTURE, PROGRESSIVE FEED, GRATE, BOILER-CONTROLLED. Progressive-feed grate-furnaces in which the amount of fuel admitted is controlled by the pressure in the boiler.

35. FURNACE STRUCTURE, PROGRESSIVE-FEED, GRATE, ROTARY, HORIZONTAL AXIS. Progressive-feed grates having a grate composed of one or more horizontal bars over which the coal is fed progressively.

CLASS 110—Continued.

36. FURNACE STRUCTURE, PROGRESSIVE-FEED, GRATE, ROTARY, VERTICAL AXIS. Furnaces with a rotary grate whose axis of rotation is substantially a plumb line and having the fuel fed on top and not from underneath the grate.

Search Classes—

110—FURNACES, subclass 13, Furnace structure, Wet fuel, Garbage and sewage, Rotary grate, Vertical axis.

126—STOVES AND FURNACES, subclass 182, Grates, Rotary, Vertical axis.

37. FURNACE STRUCTURE, PROGRESSIVE-FEED, GRATE, RAKING-BAR. Furnaces having a raking mechanism passing through the grate to move the fuel along or to rake out the ashes and cinders.

Search Class—

126—STOVES AND FURNACES, subclasses 173, Grates, Raking attachments; 175, Grates, Reciprocating bar, Alternate bar.

38. FURNACE STRUCTURE, PROGRESSIVE-FEED, GRATE, RECIPROCATING-BAR. Furnaces where the fuel is fed along the grate-bars, the movement of the bars being substantially in the line of their axis.

Search Class—

126—STOVES AND FURNACES, subclass 174, Grates, Reciprocating.

39. FURNACE STRUCTURE, PROGRESSIVE-FEED, GRATE, ROCKING-BAR. Furnaces in which the fuel is made to travel along the grate by the movement of the grate when the grate is made of sections that rock back and forth, each of said sections having a fulcrum on a fixed part of the furnace.

Search Class—

126—STOVES AND FURNACES, subclass 176, Grates, Rocking bar, and subclasses thereunder.

40. FURNACE STRUCTURE, PROGRESSIVE-FEED, GRATE, CHAIN. Furnaces with an endless grate.

41. FURNACE STRUCTURE, PROGRESSIVE-FEED, GRATE, CHAIN, MULTIPLE-FUEL. Chain-grate furnaces where two or more kinds of fuel are burned at the same time.

42. FURNACE STRUCTURE, PROGRESSIVE-FEED, GRATE, CHAIN, LOCOMOTIVE. Chain-grate furnaces especially adapted for locomotives.

43. FURNACE STRUCTURE, PROGRESSIVE-FEED, GRATE, CHAIN, BRIDGE-WALL FEED. Chain-grate furnaces in which the fuel is fed to the furnace part of the grate at the bridge-wall and the grate carries the fuel toward the front of the fire-box.

Search Class—

110—FURNACES, subclass 107, Fuel-feeders, Bridge-wall.

44. FURNACE STRUCTURE, PROGRESSIVE-FEED, UNDERFEED. Includes all furnaces where the fuel is fed underneath the burning fuel.

Search Classes—

110—FURNACES, subclass 16, Furnace structure, Wet-fuel, Garbage and sewage, Underfeed.

126—STOVES AND FURNACES, subclass 44, Stoves, Magazine.

45. FURNACE STRUCTURE, PROGRESSIVE-FEED, UNDERFEED, CENTER-FEED, CONTINUOUS. Underfeed-furnaces in which the fuel is fed to the center of the fire-box by a continuous feed-carrier, either by a screw or reciprocating carrier, but does not include center-feed furnaces where a separate charge of fuel is fed to the furnace underneath.

46. FURNACE STRUCTURE, PROGRESSIVE-FEED, UNDERFEED, CENTER-FEED, SEPARATE CHARGES. Devices that feed fuel to the fire-box center in separate charges.

47. FURNACE STRUCTURE, PROGRESSIVE-FEED, UNDERFEED, PROGRESSIVE-FEED GRATE, DOUBLE. Underfeed furnaces where the fuel is fed to the middle of the fire-box with progressive-feed grates on each side that carry the fuel along these grates to each side of the fire-box.

48. FURNACE STRUCTURE, PROGRESSIVE-FEED, UNDERFEED, PROGRESSIVE-FEED GRATE, SINGLE. Underfeed-furnaces where the fuel is fed to one side of the fire-box from underneath to a grate and by the movement of the grate is progressively carried along the grate.

49. FURNACE STRUCTURE, SMOKE AND GAS RETURN. Furnaces where the products of combustion, either wholly or in part, are returned to the same fire that produced them.

Note.—For furnaces where the products of combustion are passed through or over another fire in series, search in this class, subclass 23, Furnace structure, Multiple series.

For furnaces with two fire-boxes side by side, the products of one fire being passed to the other fire and consumed, see in this class, subclasses 26, Furnace structure, Double fire-box, Alternate smoke-return, Over fire, and 27, Furnace structure, Double fire-box, Alternate smoke-return, Under fire.

Search Class—

110—FURNACES, subclass 25, Furnace structure, Coking, Gas passing under grate.

CLASS 110—Continued.

50. FURNACE STRUCTURE, SMOKE AND GAS RETURN, LOCOMOTIVE. Smoke and gas returning devices especially adapted to a locomotive.

Search Class—

110—FURNACES, subclasses 120, Spark-arresters, Furnace-conductor, and 145, Spark and smoke conductors.

51. FURNACE STRUCTURE, SMOKE AND GAS RETURN, BEFORE PASSING BOILER-FLUES, FROM FIRE-BOX. Inventions for returning the products of combustion before they pass the boiler-flues, after they leave the fire-box, to the fire again.

Search Class—

110—FURNACES, subclasses 25, Furnace structure, Coking, Gas passing under grate; 26, Furnace structure, Double fire-box, Alternate smoke-return, Over fire, and 27, Furnace structure, Double fire-box, Alternate smoke-return, Under fire.

52. FURNACE STRUCTURE, SMOKE AND GAS RETURN, BEFORE PASSING BOILER-FLUES, FROM FIRE-BOX. Inventions for returning the smoke and gases before they pass out of the fire-box to another part of the fire-box or underneath the grate.

Search Class—

110—FURNACES, subclass 25, Furnace structure, Coking, Gas passing under grate.

53. FURNACE STRUCTURE, FEEDING AIR AND STEAM. Furnaces having mechanism for feeding air and steam. The air may be fed by a steam-jet, or the air may be fed separately at one place and the steam at another, and in some instances mentioned in the note below patents with only air-feed are placed here.

Note.—There is a parallel classification in relation to the feeding air, feeding air and steam, feeding steam, and general furnace structure. Furnaces whose products of combustion pass substantially in a horizontal direction without mechanism for feeding air or steam other than an ordinary draft are classified in subclass 82, Furnace structure, Horizontal base. If a furnace of such a character has feeding-air features beyond the bridge-wall, it is classified in subclass 73, Furnace structure, Feeding air, Horizontal base; if both feeding air and steam features, it is classified in subclass 59, Furnace structure, Feeding air and steam, Horizontal base. The same is true of the remaining parallel subclasses. Where there is no subclass under feeding air corresponding with the parallel classification, the patent containing only feeding-air features without any steam-feeding features is classified in the parallel subclass under feeding air and steam where its structure is similar to that subclass type. The reason for doing this is that in some instances there are either no patents to place in a feeding-air subclass or their number is very small, and as the structure of the two classes is very similar, a search should be made in each.

For the same reason there is only one subclass each of Boiler-controlled, Heaters, Time-limit, and Undergrate, all placed under Feeding air and steam, whether air alone or both air and steam are used.

The same remark applies to hollow grates, they being placed under the feeding-air subclass, even if steam is also used.

For feeding steam alone or water, search subclasses 78, Furnace structure, Feeding steam and water, Undergrate; 79, Furnace structure, Feeding steam, and 81, Furnace structure, Feeding water.

For air and steam feeding devices in connection with draft-regulators and spark-arresters, search in this class, subclasses 119, Spark-arresters, and the subclasses thereunder, and 147 Draft-regulators, and the subclasses thereunder.

Search Class—

110—FURNACES, subclasses 7, Furnace structure, Wet-fuel; 32, Furnace structure, Progressive-feed, and the subclasses thereunder; 49, Furnace structure, Smoke and gas return, and the subclasses thereunder; 72, Furnace structure, Feeding air; 172, Fronts, and 174, Doors, Feeding air and steam.

54. FURNACE STRUCTURE, FEEDING AIR AND STEAM, BOILER-CONTROLLED. Devices for feeding air or steam or both air and steam to furnaces, the operation of which is started or stopped by devices depending upon the pressure of steam in the boiler.

Note.—Devices that combine feeding air or steam features with automatic damper in the stack whose operation depends upon boiler-pressure are classified here, while the automatic damper and its mechanism alone are classified in class 236, DAMPERS, AUTOMATIC.

55. FURNACE STRUCTURE, FEEDING AIR AND STEAM, TIME-LIMIT. Devices for feeding air or steam to a furnace, especially just after firing with new fuel, and having means for automatically shutting off the supply of air or steam after a limited time; also devices for feeding air or steam over the fire for a time and then feeding it under the fire for a period; also devices for feeding air or steam combined with mechanism for operating a damper in the stack or outlet-flue.

Note.—The damper-operating mechanism itself will be found under their proper subclasses in class 236, DAMPERS, AUTOMATIC.

Search Class—

110—FURNACES, subclass 54, Furnace structure, Feeding air and steam, Boiler-controlled.

56. FURNACE STRUCTURE, FEEDING AIR AND STEAM, HEATERS Structure for heating air to feed furnaces or heating air and steam together.

Note.—Does not include conduits in the furnace-wall construction, for which search the other subclasses of this group and subclass 72, Furnace structure, Feeding air, and the subclasses thereunder.

For heaters peculiar to bagasse-furnaces, search in this class, subclass 7, Furnace structure, Wet-fuel.

CLASS 110—Continued.

Search Class—

75—METALLURGY, subclasses 53, Hot-blast ovens, Double-surface, and 121, Furnaces, Reverberatory, Heating air.

57. FURNACE STRUCTURE, FEEDING AIR AND STEAM, HEATERS, LOCOMOTIVE. Inventions limited to heating air to feed furnaces, especially adapted to locomotives.

Search Class—

110—FURNACES, subclasses 50, Furnace structure, Smoke and gas return, Locomotive; 61, Furnace structure, Feeding air and steam, Fire-box, Locomotive; 76, Furnace structure, Feeding air, Fire-box, Locomotive; and 120, Spark-arresters, Furnace-conductor.

237—HEAT DISTRIBUTING SYSTEMS, subclass 10, Train, Air.

58. FURNACE STRUCTURE, FEEDING AIR AND STEAM, HEATERS, MEETING FURNACE-GASES. Devices where the air is heated by passing the incoming air at least a part of the way into contact with the gases arising from the combustion of the fuel. The air may be fed above or below the fire, or both.

59. FURNACE STRUCTURE, FEEDING AIR AND STEAM, HORIZONTAL BASE. Furnaces where the products of combustion pass horizontally under a boiler or arch and the air and steam are fed into the products in the horizontal path. Also devices in which air is fed to the fire-box in combination with devices for feeding air beyond the bridge-wall.

Search Class—

110—FURNACES, subclasses 7, Furnace structure, Wet-fuel; 72, Furnace structure, Feeding air, Horizontal base, and 82, Furnace structure, Horizontal base.

60. FURNACE STRUCTURE, FEEDING AIR AND STEAM, FIRE-BOX. Devices for feeding air and steam together above the fire and also where air and steam are fed below the fire-grate when combined with the feeding of them above the fire.

Search Class—

110—FURNACES, subclasses 7, Furnace structure, Wet-fuel; 52, Furnace structure, Smoke and gas return, Before passing boiler-flues, From fire-box; 56, Furnace structure, Feeding air and steam, Heaters; 75, Furnace structure, Feeding air, Fire-box, and subclass 86, Furnace structure, Fire-box, for fire-boxes without feeding air or steam features.

61. FURNACE STRUCTURE, FEEDING AIR AND STEAM, FIRE-BOX, LOCOMOTIVE. Fire-boxes of the locomotive type having feeding air and steam features when the air is not fed below the grate.

Search Class—

110—FURNACES, subclasses 57, Furnace structure, Feeding air and steam, Heaters, Locomotive; 76, Furnace structure, Feeding air, Fire-box, Locomotive, and 120, Spark-arresters, Furnace-conductor.

62. FURNACE STRUCTURE, FEEDING AIR AND STEAM, FIRE-BOX, SUPERIMPOSED. Fire-boxes having air or steam feeding features, one fire-box being placed above the other.

Search Class—

110—FURNACES, subclass 90, Furnace structure, Fire-box, Superimposed.

63. FURNACE STRUCTURE, FEEDING AIR AND STEAM, FIRE-BOX, SUPERIMPOSED, INTERMEDIATE DRAFT. Furnaces where one fire-box is placed above the other, the draft of the upper being down through the grate and the draft of the lower being up through the grate, the products of combustion from each meeting the other, with air or steam feeding features.

Search Class—

110—FURNACES, subclass 91, Furnace structure, Fire-box, Superimposed, Intermediate draft.

64. FURNACE STRUCTURE, FEEDING AIR AND STEAM, FIRE-BOX, INTERSTITIAL OUTLET. Fire-boxes with feeding air or steam features having many small passages for the exit of the flames from the fire-box.

Search Class—

110—FURNACES, subclass 92, Furnace structure, Fire-box, Interstitial outlet.

65. FURNACE STRUCTURE, FEEDING AIR AND STEAM, FIRE-BOX, DROP-ARCH. Fire-boxes having feeding air or steam features having an arch dropped from the top of the fire-box toward the fire.

Search Class—

110—FURNACES, subclass 93, Furnace structure, Fire-box, Drop arch.

66. FURNACE STRUCTURE, FEEDING AIR AND STEAM, FIRE-BOX, DOOR AND BRIDGE-WALL ARCH. Fire-boxes having an arch projecting from both the door and bridge-wall over the fire, including feeding air or steam features.

Search Class—

110—FURNACES, subclass 94, Furnace structure, Fire-box, Door and bridge-wall arch.

67. FURNACE STRUCTURE, FEEDING AIR AND STEAM, FIRE-BOX, DOOR-ARCH. Fire boxes having an arch projecting over the fire from the door of the fire-box, including feeding air or steam features.

Search Class—

110—FURNACES, subclass 95, Furnace structure, Fire-box, Door arch.

CLASS 110—Continued.

68. FURNACE STRUCTURE, FEEDING AIR AND STEAM FIRE-BOX, BRIDGE-WALL ARCH. Fire-boxes having an arch projecting from the bridge-wall over the fire, with air or steam fed to the fire-box.

Search Class—

110—FURNACES, subclass 96, Furnace structure, Fire-box, Bridge-wall arch.

69. FURNACE STRUCTURE, FEEDING AIR AND STEAM, UNDERGRATE. Devices for admitting air and steam or air alone into the ash-pit under the grate for increasing draft and promoting combustion.

Search Classes—

110—FURNACES, subclasses 60, Furnace structure, Feeding air and steam, Fire-box; 74, Furnace structure, Feeding air, Hollow grate, and 75, Furnace structure, Feeding air, Fire-box.

230—AIR AND GAS PUMPS, subclass 13, Fluid-piston, Injectors and aspirators.

70. FURNACE STRUCTURE, FEEDING AIR AND STEAM, UNDERGRATE, LOCOMOTIVE. Devices for admitting air and steam into the ash-pan of a locomotive for assisting the draft and promoting combustion.

Search Classes—

110—FURNACES, subclasses 61, Furnace structure, Feeding air and steam, Fire-box, Locomotive, and 76, Furnace structure, Feeding air, Fire-box, Locomotive.

230—AIR AND GAS PUMPS, subclass 13, Fluid-piston, Injectors and aspirators, for structure of blower.

71. FURNACE STRUCTURE, FEEDING AIR AND STEAM, UNDERGRATE, DEFLECTORS. Devices for deflecting the air and steam as it is admitted under the grate.

Search Class—

110—FURNACES, subclasses 23, Furnace structure, Multiple series; 69, Furnace structure, Feeding air and steam, Fire-box, Undergrate, and 70, Furnace structure, Feeding air and steam, Undergrate, Locomotive.

72. FURNACE STRUCTURE, FEEDING AIR. Miscellaneous structures where air is fed to a furnace, not otherwise classified. Note.—When steam is fed with the air, such patents are classified in the feeding air and steam subclasses. When the air is fed in connection with a progressive-feed furnace, see in this class, subclass 32, Furnace structure, Progressive-feed. For feeding air and smoke, see subclass 49, Furnace structure, Smoke and gas return. See also definition of subclass 53, Furnace structure, Feeding air and steam. See also subclass 101, Fuel-feeders, when air is fed with the fuel. For feeding air to a furnace for a limited time, see subclass 55, Furnace structure, Feeding air and steam, Time-limit. For feeding-air doors, see subclass 175, Doors, Feeding air. For draft regulation and spark-arresters, see subclasses 119, Spark-arresters, and 147, Draft-regulators.

Search Classes—

110—FURNACES, subclasses 7, Furnace structure, Wet-fuel; 53, Furnace structure, Feeding air and steam, and 56, Furnace structure, Feeding air and steam, Heaters.

126—STOVES AND FURNACES, for feeding-air devices applicable to domestic stoves and furnaces.

73. FURNACE STRUCTURE, FEEDING AIR, HORIZONTAL BASE. Furnaces where the products of combustion pass horizontally under a boiler or arch and the air is fed into the products in the horizontal path. Generally the boiler is of the common horizontal cylindrical type; but it may include those furnaces set into a large flue of a horizontal boiler. It also includes feeding air to the fire-box in combination with devices for feeding air beyond the bridge-wall.

Search Class—

110—FURNACES, subclasses 4, Furnace structure, Horizontal cylindrical boiler; 31, Furnace structure, Gas-producer; 54, Furnace structure, Feeding air and steam, Boiler-controlled; 75, Furnace structure, Feeding air and steam, Time-limit; 56, Furnace structure, Feeding air and steam, Heaters; 59, Furnace structure, Feeding air and steam, Horizontal base.

74. FURNACE STRUCTURE, FEEDING AIR, HOLLOW GRATE. Furnaces having grates made hollow, through which air, steam, or water passes to aid combustion. Claims to mechanism for forcing air and steam into the furnace, if combined with the grate structure, are placed here, as well as the specific article, hollow grate.

75. FURNACE STRUCTURE, FEEDING AIR, FIRE-BOX. Devices for feeding air above the fire and combination devices for feeding air above and below the grate.

Note.—For feeding air combined with an air-heater, see subclass 56, Furnace structure, Feeding air and steam, Heaters. For air-feeding features combined with a hollow grate, see subclass 74, Furnace structure, Feeding air, Hollow grate.

Search Class—

110—FURNACES, subclasses 7, Furnace structure, Wet-fuel; 49, Furnace structure, Smoke and gas return, and subclasses thereunder; 57, Furnace structure, Feeding air and steam, Heaters, Locomotive; 61, Furnace structure, Feeding air and steam, Fire-box, Locomotive; 74, Furnace structure, Feeding air, Hollow grate, and subclasses 120, Spark-arresters, Furnace-conductor, for air-feeding features.

76. FURNACE STRUCTURE, FEEDING AIR, FIRE-BOX, LOCOMOTIVE. Devices for feeding air above the fire in a locomotive type of boiler and also combination devices for feeding air above and below the grate.

Search Class—

110—FURNACES, subclasses 49, Furnace structure, Smoke and gas return, and the subclasses thereunder; 57, Furnace structure, Feeding air and steam, Heaters, Locomotive; 61, Furnace structure, Feeding air and steam, Fire-box, Locomotive; 74, Furnace structure, Feeding air, Hollow grate, and subclass 120, Spark-arresters, Furnace-conductor, for air-feeding features.

CLASS 110—Continued.

77. FURNACE STRUCTURE, FEEDING AIR, FIRE-BOX, DOUBLE. Furnaces having a double fire-box side by side having air-feed over the fire.

Search Class—

110—FURNACES, subclasses 26, Furnace structure, Double fire-box, Alternate smoke-return, Over fire, and 27, Furnace structure, Double fire-box, Alternate smoke-return, Under fire.

78. FURNACE STRUCTURE, FEEDING STEAM AND WATER, UNDERGRATE. Devices for feeding steam or water under the grate or upon the grate for aiding combustion or preventing the formation of clinkers on the grate or on the furnace-walls.

Search Class—

110—FURNACES, subclass 74, Furnace structure, Feeding air, Hollow grate.

79. FURNACE STRUCTURE, FEEDING STEAM. Devices for feeding steam to furnaces not otherwise classifiable.

80. FURNACE STRUCTURE, FEEDING STEAM, FIRE-BOX. Devices for feeding steam alone over the fire or in combination with steam fed under the grate.

81. FURNACE STRUCTURE, FEEDING WATER. Devices for feeding water to furnaces to assist combustion.

Note.—This subclass does not include water sprays for extinguishing sparks in the smoke box or stack, such devices being found in subclass 119, Spark-arresters, and subclasses thereunder, or subclass 183, Smoke-purifiers, nor does it include devices for feeding water or steam under the grate, which are classified in this class, subclass 78, Furnace structure, Feeding steam and water, Undergrate.

82. FURNACE STRUCTURE, HORIZONTAL BASE. Structure of the base of furnaces where the products of combustion pass from the fire-box in a substantially horizontal direction.

Note.—This same construction of furnace when having feeding air or steam features will be found in the parallel classification. When patents contain claims to structure of furnace-wall above the base surrounding a horizontal cylindrical boiler, they are classified in this class, subclass 4, Furnace structure, Horizontal cylindrical boiler, which should be searched.

Search Class—

110—FURNACES, subclasses 53, Furnace structure, Feeding air and steam; 59, Furnace structure, Feeding air and steam, Horizontal base; 71, Furnace structure, Feeding air and steam, Undergrate, Deflectors, and 72, Furnace structure, Feeding air, and the subclasses thereunder.

83. FURNACE STRUCTURE, REVERSIBLE DRAFT. Furnaces with mechanism for passing the draft through the grate in the opposite direction from that usually employed.

84. FURNACE STRUCTURE, DOWNDRAFT. Furnaces having a grate for the support of fuel and the draft being down through the fuel and the grate.

Search Class—

110—FURNACES, subclasses 5, Furnace structure, Straw burners and feeders; 63, Furnace structure, Feeding air and steam, Superimposed, Intermediate draft, and 91, Furnace structure, Fire-box, Superimposed, Intermediate draft, for furnaces having two fire-boxes, one superimposed above the other, with downdraft through the upper one.

85. FURNACE STRUCTURE, GRATELESS. Furnaces in which there is no perforated support or grate, but does not include structures of furnaces designed to burn wet fuel, such as bagasse, having no grate; nor does it include furnaces having no grate that burn fine fuel in suspension, but only those furnaces where the fuel rests upon a grateless bottom.

Search Class—

110—FURNACES, subclasses 7, Furnace structure, Wet-fuel, and the subclasses thereunder, and 31, Furnace structure, Gas-producer.

86. FURNACE STRUCTURE, FIRE-BOX. Fire-box constructions generally where there are no feeding air or steam features. Here are placed dead-plates when not connected with air-feed mechanism and fine-fuel burners when it is not burned in suspension.

Search Class—

110—FURNACES, subclasses 7, Furnace structure, Wet-fuel; 17, Furnace structure, Wet-fuel, Fuel support; 60, Furnace structure, Feeding air and steam, Fire-box; 75, Furnace structure, Feeding air, Fire-box; 80, Furnace structure, Feeding steam, Fire-box, and 90, Furnace structure, Fire-box, Superimposed.

87. FURNACE STRUCTURE, FIRE-BOX, LOCOMOTIVE. Fire-boxes adapted for locomotives.

Search Classes—

110—FURNACES, subclasses 26, Furnace structure, Double fire-box, Alternate smoke-return, Over fire; 27, Furnace structure, Double fire-box, Alternate smoke-return, Under fire; 57, Furnace structure, Feeding air and steam, Heaters, Locomotive; 61, Furnace structure, Feeding air and steam, Fire-box, Locomotive; 70, Furnace structure, Feeding air and steam, Undergrate, Locomotive, and 76, Furnace structure, Feeding air, Fire-box, Locomotive.

122—LIQUID HEATERS AND VAPORIZERS, for hollow grates.

CLASS 110—Continued.

88. FURNACE STRUCTURE, FIRE-BOX, EXTERIOR, DETACHABLE. Fire-boxes that are wholly exterior and separate from the body of the furnace and capable of being detached therefrom.

Note.—For this type of fire-box for straw-burning furnaces, see class 126, STOVES AND FURNACES, subclasses 49, Burners, Refuse, and 79, Burners, Hay and straw.

Search Class—

110—FURNACES, subclass 6, Furnace structure, Straw burners and feeders, Fire-box, Exterior, Detachable.

89. FURNACE STRUCTURE, FIRE-BOX, ADJUSTABLE. Fire-boxes the size of which is variable, either by having a movable adjustable grate, a movable adjustable bridge-wall, or dead-plates that cover up more or less of the grate-surface to vary the effective area of the fire.

Search Class—

126—STOVES AND FURNACES, subclasses 144, Firepots and linings and subclasses thereunder, and 152, Grates and subclasses thereunder.

90. FURNACE STRUCTURE, FIRE-BOX, SUPERIMPOSED. Fire-boxes where one is located directly over the other.

Search Class—

110—FURNACES, subclass 62, Furnace structure, Feeding air and steam, Fire-box, Superimposed.

91. FURNACE STRUCTURE, FIRE BOX, SUPERIMPOSED, INTERMEDIATE DRAFT. Fire-boxes where one is located above the other, with the draft passing up through the fire on the lower grate and down through the fire on the upper grate.

Search Classes—

110—FURNACES, subclass 63, Furnace structure, Feeding air and steam, Fire-box, Superimposed, Intermediate draft.

122—LIQUID HEATERS AND VAPORIZERS, for water-grates, etc.

92. FURNACE STRUCTURE, FIRE-BOX, INTERSTITIAL OUTLET. Fire-boxes where the gases must pass through small perforations or numerous limited spaces before the escape from the fire-box. These outlets may be formed by perforating an arch over the fire, by numerous arches over the fire with small spaces between them, or the small spaces may be in the bridge wall.

Search Class—

110—FURNACES, subclasses 65, Furnace structure, Feeding air and steam, Fire-box, Drop-arch, for fire-boxes of this type having feeding air or steam features; and 97, Furnace structure, Baffles and heat-retainers.

93. FURNACE STRUCTURE, FIRE-BOX, DROP-ARCH. Furnaces with an arch projecting from the top of the fire-box or boiler toward the fire.

Note.—Search this class for fire-boxes of this type having feeding air or steam features in subclasses 65, Furnace structure, Feeding air and steam, Fire-box, Drop-arch, and 99, Furnace structure, Arches.

94. FURNACE STRUCTURE, FIRE-BOX, DOOR AND BRIDGE-WALL ARCH. Fire-boxes with an arch projecting back from the door and bridge-wall over the fire, the products of combustion passing between them.

Note.—For fire-boxes of this type having feeding air or steam features, see in this class, subclass 66, Furnace structure, Feeding air and steam, Fire-box, Door and bridge-wall arch.

95. FURNACE STRUCTURE, FIRE-BOX, DOOR-ARCH. Furnaces with an arch extending from the door or front of the furnace over the fire.

Note.—For fire-boxes of similar construction with feeding air or steam features, search in this class, subclasses 67, Furnace structure, Feeding air and steam, Fire-box, Door-arch; 99, Furnace structure, Arches; 180, Doors and casings, Cooling, and 182, Door casings and arches, Feeding air.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 497, Fronts, and subclasses thereunder.

96. FURNACE STRUCTURE, FIRE-BOX, BRIDGE-WALL ARCH. Furnaces with an arch extending from the bridge-wall over the fire.

Note.—For furnaces with feeding air or steam features having a bridge-wall arch over the fire, search in this class, subclass 68, Furnace structure, Feeding air and steam, Fire-box, Bridge-wall arch.

97. FURNACE STRUCTURE, BAFFLES AND HEAT-RETAINERS. Devices for retarding the heat or reflecting it upon the boilers and concentric tiles and arches fitting on the under side of a cylindrical boiler for modifying the heat, but does not include movable dampers. Here are also placed heat-absorbers, whether they be solid or liquid.

Search Classes—

110—FURNACES, subclasses 64, Furnace structure, Feeding air and steam, Fire-box, Interstitial outlet; 123, Spark-arresters, Smoke-box, Draft-regulator, and 163, Draft-regulators, Damper.

122—LIQUID HEATERS AND VAPORIZERS.

98. FURNACE STRUCTURE, BAFFLES AND HEAT-RETAINERS, WATER-TUBE BOILERS. Devices attached to the water-tubes of water-tube boilers for directing and retarding the products of combustion or deflecting the heat generated among the tubes. Also screens for retarding and reflecting the heat.

CLASS 110—Continued.

Search Classes—

110—FURNACES, subclasses 123, Spark-arresters, Smoke-box, Draft-regulators, and 163, Draft-regulators, Damper.

122—LIQUID HEATERS AND VAPORIZERS.

99. FURNACE STRUCTURE, ARCHES. Furnace arch construction not otherwise classified.

Search Class—

110—FURNACES, all fire-box subclasses generally.

Also subclasses 10, Furnace structure, Wet-fuel, Garbage and sewage, Steam-boiler; 20, Furnace structure, Wet-fuel, Refuse, Stubble; 27, Furnace structure, Double fire-box, Alternate smoke-return, Under fire; 30, Furnace structure, Magazine, Cage-grate; 60, Furnace structure, Feeding air and steam, Fire box, and the subclasses thereunder; 86, Furnace structure, Fire-box, and the subclasses thereunder; 180, Doors and casings, Cooling, and 181, Door casings and arches.

100. FURNACE STRUCTURE, BY-PASS FLUE. Furnaces having by-pass flues leading from the fire to the chimney, so that the heat may be passed through it and cut off from its regular course under or through the boiler. Also patents where the fire-box is removed from its usual place in the furnace to another compartment, the by-pass flue connecting this compartment with the stack.

Search Class—

127—SUGAR AND SALT, subclass 9, Evaporating-pans.

101. FUEL-FEEDERS. Devices for feeding fuel to furnaces except straw-feeders and feeders when combined with a progressive-feed grate.

Note.—Patents for feed-hoppers when not combined with grate structures are classified in this class, subclass 108, Fuel-feeders, Hopper, and the subclasses thereunder, although designed to feed fuel to a progressive-feed grate; but when there are claims also to the grate they are classified under progressive-feed grates, subclass 32, Furnace structure, Progressive-feed, and the subclasses thereunder.

Search Classes—

110—FURNACES, subclasses 5, Furnace structure, Straw-burners; 7, Furnace structure, Wet-fuel; 28, Furnace structure, Fine fuel burned in suspension; 32, Furnace structure, Progressive-feed, and the subclasses thereunder.

48—GAS, HEATING AND ILLUMINATING, subclass 86, Generators, Cupola, Chargers.

83—MILLS, subclass 11, Grinding-mills, Rotary beaters.

193—CONVEYERS, all subclasses.

202—CHARCOAL AND COKE, subclass 5, Coke, Ovens, Chargers and dischargers.

214—LOADING AND UNLOADING, subclass 23, Loading and unloading, Furnace-charging.

222—HYDRAULIC LIME AND CEMENT, subclass 7, Kilns, Rotary.

102. FUEL-FEEDERS, SHAVINGS AND SAWDUST. Fuel-feeding devices especially adapted for feeding shavings and sawdust to furnaces.

Note.—Where the structure is capable of feeding coal and other fuel also, it is classified under the other fuel-feeding subclasses. Feed-chutes located on the straw-burning furnace are classified in this class, subclass 5, Furnace structure, Straw burners and feeders, which subclass should be searched.

Search Class—

83—MILLS, subclass 47, Dust-collectors, Reciprocating.

103. FUEL-FEEDERS, BOILER-CONTROLLED. Devices for feeding fuel whose operation is controlled by the pressure of steam in the boiler.

Note.—For furnaces having progressive-feed grates whose movements and feeding mechanism are controlled by the pressure of steam in the boiler, search in this class, subclass 34, Furnace structure, Progressive-feed, Grate, Boiler-controlled.

Search Class—

110—FURNACES, subclasses 54, Furnace structure, Feeding air and steam, Boiler-controlled, and 236, Dampers, Automatic.

104. FUEL-FEEDERS, BLOWER. Devices for blowing the fuel into the fire-box either by air or steam or both conjoined together, with devices for conveying the fuel to the blower into the path of the fluid current, and all devices for preparing the fuel by pulverizing it if subsequently delivered to the furnace by a fluid-jet.

Search Classes—

110—FURNACES, subclasses 102, Fuel-feeders, Shavings and sawdust; 103, Fuel-feeders, Boiler-controlled, and 108, Fuel-feeders, Hopper.

193—CONVEYERS, subclasses 1, Conveyers; 10, Pneumatic, and 21, Pneumatic, Stackers.

222—HYDRAULIC LIME AND CEMENT, subclass 7, Kilns, Rotary.

230—AIR AND GAS PUMPS, subclasses 11, Fan-blowers, and 13, Fluid-piston, Injectors and aspirators.

105. FUEL-FEEDERS, BLOWER, HOPPER. Feeders in which the fuel is fed from a hopper and delivered to the furnace by a blast of air or steam, such hopper being immediately attached to the furnace.

Note.—When the hopper feeds into a conduit a long distance from the furnace, such patents are classified in this class, subclass 104, Fuel-feeders, Blower, which should be searched.

Search Class—

110—FURNACES, subclass 108, Fuel-feeders, Hopper.

CLASS 110—Continued.

106. **FUEL-FEEDERS, BLOWER, PULVERIZER.** Devices having a fan-blower where the fuel is passed through the fan-casing and is pulverized by the fan-blades, and it includes also those devices having a fan-blower and a rotary grinder in the same casing or in a casing in close proximity to the fan-casing for pulverizing the fuel, and the fuel is passed on by the air-current to the fire-box.

Search Classes—

- 110—FURNACES, subclasses 105, Fuel-feeders, Blower, Hopper, and 115, Fuel-feeders, Spreader, Rotary.
83—MILLS, subclass 11, Grinding-mills, Rotary beaters.

107. **FUEL-FEEDERS, BRIDGE-WALL.** Devices for feeding fuel to the furnace at the bridge-wall except those that feed at the bridge-wall upon a chain-grate, and these are classified under subclass 43, Furnace structure, Progressive-feed, Grate, Chain, Bridge-wall feed.

Search Class—

- 110—FURNACES, subclass 43, Furnace structure, Progressive-feed, Grate, Chain, Bridge-wall feed.

108. **FUEL-FEEDERS, HOPPER.** Feed-hoppers *per se* when not combined with other features.

Search Classes—

- 110—FURNACES, subclasses 34, Furnace structure, Progressive-feed, Grate, Boiler-controlled; 37, Furnace structure, Progressive-feed, Grate, Raking-bar; 38, Furnace structure, Progressive-feed, Grate, Reciprocating-bar; 39, Furnace structure, Progressive-feed, Grate, Rocking-bar; 104, Fuel feeders, Blower; 105, Fuel-feeders, Blower, Hopper; 113, Fuel-feeders, Spreader, Oscillating; 114, Fuel-feeders, Spreader, Reciprocating-plunger; 115, Fuel-feeders, Spreader, Rotary, and 117, Fuel-feeders, Chute, Door, Multiple-charge.
83—MILLS.

109. **FUEL-FEEDERS, HOPPER, PUSHER, RECIPROCATING.** Hoppers and feed-chutes where the fuel is simply pushed into the furnace by a reciprocating member.

Search Class—

- 110—FURNACES, subclasses 34, Furnace structure, Progressive-feed, Grate, Boiler-controlled; 37, Furnace structure, Progressive-feed, Grate, Raking-bar; 38, Furnace structure, Progressive-feed, Grate, Reciprocating-bar; 39, Furnace structure, Progressive-feed, Grate, Rocking-bar, and 44, Furnace structure, Progressive-feed, Underfeed.

110. **FUEL-FEEDERS, HOPPER, PUSHER, SCREW.** Feed-hoppers that push the fuel into the body of fuel in the fire-box by a rotary screw.

Search Class—

- 110—FURNACES, subclasses 34, Furnace structure, Progressive-feed, Grate, Boiler-controlled; 37, Furnace structure, Progressive-feed, Grate, Raking-bar; 38, Furnace structure, Progressive-feed, Grate, Reciprocating-bar; 39, Furnace structure, Progressive-feed, Grate, Rocking-bar, and 44, Furnace structure, Progressive-feed, Underfeed.

111. **FUEL-FEEDERS, SPREADER, CARRIER.** Devices that have a carrier for taking the fuel into the furnace over the fire and scattering it thereon, such carrier not passing through the door.

Search Classes—

- 193—CONVEYERS, generally for various forms of carriers.
202—CHARCOAL AND COKE, subclass 5, Coke, Ovens, Chargers and dischargers.
214—LOADING AND UNLOADING, subclass 23, Loading and unloading, Furnace-charging.

112. **FUEL-FEEDERS, SPREADER, CARRIER, DOOR.** Devices for carrying fuel through the furnace-door over the fire and scattering it thereon.

Search Classes—

- 193—CONVEYERS, generally for structure of carrier.
202—CHARCOAL AND COKE, subclass 5, Coke, Ovens, Chargers and dischargers.
214—LOADING AND UNLOADING, subclass 23, Loading and unloading, Furnace-charging.

113. **FUEL-FEEDERS, SPREADER, OSCILLATING.** Fuel-feed hoppers having an oscillating fuel-spreader that scatters the fuel delivered upon it over the fire.

114. **FUEL-FEEDERS, SPREADER, RECIPROCATING-PLUNGER.** Fuel-feeding hoppers that deliver the fuel before a plunger that scatters the coal over the fire.

Search Class—

- 110—FURNACES, subclass 109, Fuel-feeders, Hopper, Pusher, Reciprocating.

115. **FUEL-FEEDERS, SPREADER, ROTARY.** Fuel-feed hoppers having a rotary fuel-spreader that scatters the fuel delivered to it over the fire.

Search Class—

- 110—FURNACES, subclass 106, Fuel-feeders, Blower, Pulverizer.

116. **FUEL-FEEDERS, CHUTE, DOOR.** Devices for feeding fuel through a gravity-feed chute to the furnace through the furnace-doorway.

Search Class—

- 110—FURNACES, subclasses 5, Furnace structure, Straw burners and feeders, and 118, Fuel-feeders, Vertical-drop.

117. **FUEL-FEEDERS, CHUTE, DOOR, MULTIPLE CHARGE.** Fuel-feeding devices for charging furnaces with fuel at intervals, either motor or clock operated or operated by hand, at the will of the operator, such being fed through the doorway of the furnace.

Search Class—

- 110—FURNACES, subclass 118, Fuel-feeders, Vertical-drop.

CLASS 110—Continued.

118. **FUEL-FEEDERS, VERTICAL-DROP.** Devices for delivering fuel to the fire-box by gravity feed when the fuel is fed from overhead and falls directly upon the fire from above.

Search Classes—

- 110—FURNACES, subclasses 29, Furnace structure, Magazine, and 117, Fuel-feeders, Chute, Door, Multiple-charge.

- 48—GAS, HEATING AND ILLUMINATING, subclass 86, Generators, Cupola, Chargers.

- 75—METALLURGY, subclasses 114, Furnaces, Blast, Charging devices, and 115, Furnaces, Blast, Charging devices, Bell and Hopper.

119. **SPARK-ARRESTERS.** Devices for preventing live sparks from passing out of the stack or chimney. This is accomplished either by screens, baffles, steam or water spray located either in the smoke-box or smoke-stack and in some cases by screens in the boiler-flues.

Note.—When both the smoke and sparks are returned to the fire-box, such patents are classified in subclass 49, Furnace structure, Smoke and gas return, and subclasses thereunder.

When only the sparks are returned, the devices will be placed in this class, subclass 120, Spark-arresters, Furnace-conductor.

For a discussion of the relations between spark-arresters and smoke-purifiers, see under subclass 142, Spark-arresters, Stack, Steam or water spray, note to definition.

For distinction between this subclass and ordinary baffles and heat-retainers, see subclass 97, Furnace structure, Baffles and heat-retainers.

When the sparks and smoke are simply conducted away to the ground from the locomotive or over the train, these devices are classified in subclass 145, Spark and smoke conductors.

Search Classes—

- 110—FURNACES, subclasses 97, Furnace structure, Baffles and heat-retainers; 98, Furnace structure, Baffles and heat-retainers, Water-tube boilers; 145, Spark and smoke conductors; 146, Spark and smoke conductors, Train, and 183, Smoke-purifiers.

- 48—GAS, HEATING AND ILLUMINATING, subclass 135, Purifiers, Washer and scrubber, Spray.

- 75—METALLURGY, subclass 30, Fume-arresters.

- 83—MILLS, subclasses 47, Dust-collectors, Reciprocating, and 48, Dust-collectors, Rotating.

- 98—PNEUMATICS, subclasses 37, Ventilation, Combined ventilators and cleaners, Water-tanks, Spraywheel; 39, Ventilation, Air moistening, cooling, and cleansing, and the subclasses thereunder, and all subclasses under the subtitle of Chimney-cowls.

- 126—STOVES AND FURNACES, subclasses 183, Heating-drums, and 280, Soot catchers.

120. **SPARK-ARRESTERS, FURNACE-CONDUCTOR.** Devices where the sparks are returned to the furnace, either to the fire-box or ash-pan.

Search Class—

- 110—FURNACES, subclasses 49, Furnace structure, Smoke and gas return, and 50, Furnace structure, Smoke and gas return, Locomotive, where the smoke and sparks both are returned to the fire-box.

121. **SPARK-ARRESTERS, COMBINED STACK AND SMOKE-BOX.** Devices where the arrester is contained in both the stack and smoke-box.

Search Class—

- 110—FURNACES, subclasses 124, Spark-arresters, Smoke-box, Divided, and 140, Spark-arresters, Stack, Tangential separator.

122. **SPARK-ARRESTERS, SMOKE-BOX.** Devices located in the smoke-box for arresting sparks.

123. **SPARK-ARRESTERS, SMOKE-BOX, DRAFT-REGULATOR.** Invention limits to draft regulation in addition to a spark-arrester or where there are claims that involve the combination of the two functions.

Note.—The subclass of spark-arresters is made superior to that of draft-regulators.

Search Class—

- 110—FURNACES, subclass 126, Spark-arresters, Smoke-box, Vertical-drum, where draft regulation is of vertical-drum type.

124. **SPARK-ARRESTERS, SMOKE-BOX, DIVIDED.** Smoke-boxes having two compartments, into one of which the sparks are precipitated.

Search Class—

- 110—FURNACES, subclasses 140, Spark-arresters, Stack, Tangential separator; 143, Spark-arresters, Stack, Water-receptacle, and 144, Spark-arresters, Water-receptacle.

125. **SPARK-ARRESTERS, SMOKE-BOX, HOOD.** Devices having a hood over the boiler-tubes, through which the products of combustion must pass.

Search Class—

- 110—FURNACES, subclasses 120, Spark-arresters, Furnace-conductor, and 124, Spark-arresters, Smoke-box, Divided.

126. **SPARK-ARRESTERS, SMOKE-BOX, VERTICAL-DRUM.** Devices where the arrester is hollow, somewhat cylindrical in form, and vertically arranged, through which the exhaust-steam passes.

Search Class—

- 110—FURNACES, subclasses 121, Spark-arresters, Combined stack and smoke-box; 123, Spark-arresters, Smoke-box, Draft-regulator, and 144, Draft-regulators, Lift-pipe.

CLASS 110—Continued.

127. SPARK-ARRESTERS, SMOKE-BOX, EJECTOR. Devices for ejecting the sparks from the smoke-box by a jet of steam, air, water, or a fan or other means.

Search Class—

110—FURNACES, subclass 120, Spark-arresters, Furnace-conductor.

128. SPARK-ARRESTERS, SMOKE-BOX, WATER-RECEPTACLE. Devices where the sparks are precipitated into a water-receptacle in the smoke-box and also includes devices with a steam or water spray in combination with the receptacle.

Note.—For a discussion of the relation of devices for extinguishing sparks and purifying smoke by water or steam, see in this class, subclass 142, Spark-arresters, Stack, Steam or water spray.

When sparks are precipitated into a separate compartment of the smoke-box, but not into a water-receptacle, such devices are classified in subclass 124, Spark-arresters, Smoke-box, Divided.

Search Classes—

110—FURNACES, subclasses 140, Spark-arresters, Stack, Tangential separator; 143, Spark-arresters, Stack, Water-receptacle; 144, Spark-arresters, Water-receptacle, and 183, Smoke-purifiers.

48—GAS, HEATING AND ILLUMINATING, subclass 130, Purifiers, Washer and scrubber.

83—MILLS, subclasses of Dust-collectors.

98—PNEUMATICS, subclass 39, Ventilation, Air moistening, cooling, and cleansing.

129. SPARK-ARRESTERS, SMOKE-BOX, DISCHARGE-VALVE. Discharge-valves for dumping the sparks from the smoke-box.

130. SPARK-ARRESTERS, STACK. Devices in or immediately applied to a smoke-stack for arresting sparks.

Search Classes—

110—FURNACES, subclasses 50, Furnace structure, Smoke and gas return, Locomotive; 121, Spark-arresters, Combined stack and smoke-box, and 145, Spark and smoke conductors.

98—PNEUMATICS, subclasses under Chimney-cowls.

121—STEAM-ENGINES, subclass 116, Mufflers.

126—STOVES AND FURNACES, subclasses 183, Heating-drums, and 280, Soot-catchers.

131. SPARK-ARRESTERS, STACK, FEEDING AIR. Devices where air is let into the stack for the purpose of allowing the sparks to be consumed in the passage and for diluting the smoke with air. This subclass is closely allied to subclass 157, Draft-regulators, Smoke-box, Feeding air.

Search Classes—

110—FURNACES, subclass 157, Draft-regulators, Smoke-box, Feeding air.

98—PNEUMATICS, subclasses under Chimney-cowls, and 30, Ventilating-chimneys.

132. SPARK-ARRESTERS, STACK, RETURN-CURRENT. Devices where the sparks are thrown out of the exhaust-current and are again caught up and carried round and round until they are disintegrated and extinguished. Patents are classified here, although there may be a pipe to conduct the sparks to the exhaust-nozzle in the smoke-box.

133. SPARK-ARRESTERS, STACK, ANNULAR RECEPTACLE. Devices in which the sparks are precipitated into an annular receptacle in or around the stack, except those included under other definitions under this subtitle.

Search Classes—

110—FURNACES, subclasses 132, Spark-arresters, Stack, Return-current; 134, Spark-arresters, Stack, Annular receptacle, Conductor; 137, Spark-arresters, Stack, Rotary baffle; 138, Spark-arresters, Stack, Spiral baffle, Stationary, and 139, Spark-arresters, Stack, Spiral baffle, Stationary, Separator.

121—STEAM-ENGINES, subclass 116, Mufflers.

134. SPARK-ARRESTERS, STACK, ANNULAR RECEPTACLE, CONDUCTOR. Devices in which the sparks are precipitated into an annular receptacle in the stack, such receptacle having a conductor for the sparks leading therefrom, with the exception of those classified in other subclasses of this group.

Search Class—

110—FURNACES, subclasses 120, Spark-arresters, Furnace-conductor; 121, Spark-arresters, Combined stack and smoke-box; 137, Spark-arresters, Stack, Rotary baffle; 138, Spark-arresters, Stack, Spiral baffle, Stationary, and 139, Spark-arresters, Stack, Spiral baffle, Stationary, Separator.

135. SPARK-ARRESTERS, STACK, CENTRAL DISCHARGE DOWNWARD. Devices that discharge the sparks centrally and downwardly from the stack.

136. SPARK-ARRESTERS, STACK, CENTRAL DISCHARGE UPWARD. Devices that discharge the sparks centrally and upwardly from the stack.

137. SPARK-ARRESTERS, STACK, ROTARY BAFFLE. Rotating devices within a stack operated by the outgoing current and designed to beat the sparks to a powder or precipitate them.

Search Classes—

110—FURNACES, subclass 162, Draft-regulators, Fan-exhaust.

98—PNEUMATICS, subclass 2, Chimney-cowls, Ejector, Draft-wheel.

CLASS 110—Continued.

138. SPARK-ARRESTERS, STACK, SPIRAL BAFFLE, STATIONARY. Devices where there is a spiral baffle to give the sparks a spiral motion when passing through the stack.

Search Class—

126—STOVES AND FURNACES, subclass 32, Heating-drums.

139. SPARK-ARRESTERS, STACK, SPIRAL BAFFLE, STATIONARY SEPARATOR. Devices where there is a stationary spiral baffle to give the sparks a spiral motion and cast them to one side, separating them from the smoke and preventing them from passing out of the stack with the smoke.

140. SPARK-ARRESTERS, STACK, TANGENTIAL SEPARATOR. Devices where the sparks are separated from the smoke when the path of the smoke is changed from a straight line, the sparks passing out of the current by virtue of their momentum, but not classified in subclass 139, Spark-arresters, Stack, Spiral baffle, Stationary, Separator.

Search Class—

110—FURNACES, subclasses 124, Spark-arresters, Smoke-box, Divided, and 143, Spark-arresters, Stack, Water-receptacle.

141. SPARK-ARRESTERS, STACK, HEADS, SYMMETRICAL. Devices in which there is a symmetrically-shaped head on the top of a stack and not otherwise classified.

Search Class—

110—FURNACES, subclasses under the subtitle Spark-arresters, Stack.

142. SPARK-ARRESTERS, STACK, STEAM OR WATER SPRAY. Devices for extinguishing sparks in a stack by steam or water spray when the extinguishing-sprayer is intimately connected with the construction of the stack. (See note below.)

Note.—If the products of combustion pass from the stack into a by-pass and are there washed or sprayed, such devices are classified in subclass 183, Smoke-purifiers.

Devices having a water-receptacle on the outside of the stack with water or steam spray, the gases being passed through a by-pass and the sparks being precipitated into the water-receptacle, are classified in subclass 143, Spark-arresters, Stack, Water-receptacle.

Devices having a water-receptacle into which sparks are precipitated when not intimately connected with the stack by position or construction are classified in subclass 144, Spark-arresters, Water-receptacle, unless such receptacle is within or forms part of the smoke-box structure, when they are placed in subclass 128, Spark-arresters, Smoke-box, Water-receptacle.

For spraying devices for extinguishing sparks in ash-pans, search subclass 171, Ash receiving and handling devices, Ash-pans, Steam and water attachments.

Search Classes—

110—FURNACES, subclasses 128, Spark-arresters, Smoke-box, Water-receptacle; 143, Spark-arresters, Stack, Water-receptacle; 144, Spark-arresters, Water-receptacle, and 183, Smoke-purifiers.

48—GAS, HEATING AND ILLUMINATING, subclass 128, Purifiers, and the subclasses thereunder.

75—METALLURGY, subclass 30, Fume-arresters.

83—MILLS, subclasses 47, Dust-collectors, Reciprocating, and 48, Dust-collectors, Rotating.

98—PNEUMATICS, subclass 39, Ventilation, Air moistening, cooling, and cleansing, and the subclasses thereunder.

143. SPARK-ARRESTERS, STACK, WATER-RECEPTACLE. Devices where the sparks are precipitated into a water-receptacle in or on the outside of the stack.

Search Classes—

110—FURNACES, subclasses 142, Spark-arresters, Stack, Steam or water spray; 144, Spark-arresters, Water-receptacle, and 183, Smoke-purifiers.

48—GAS, HEATING AND ILLUMINATING, subclass 128, Purifiers, and the subclasses thereunder.

Search Classes—

75—METALLURGY, subclass 30, Fume-arresters.

83—MILLS, subclasses 47, Dust-collectors, Reciprocating, and 48, Dust-collectors, Rotating.

98—PNEUMATICS, all subclasses under 39, Ventilation, Air moistening, cooling, and cleansing.

144. SPARK-ARRESTERS, WATER-RECEPTACLE. Devices having a water-receptacle into which sparks are precipitated to extinguish them, the smoke passing off and not entering the water, such receptacles not being a part of the stack structure.

Search Classes—

110—FURNACES, subclass 143, Spark-arresters, Stack, Water-receptacle, for devices having a water receptacle in the stack; subclass 183, Smoke-purifiers for devices for purifying smoke of both sparks and visible smoke by washing the smoke with water, and subclass 142, Spark-arresters, Stack, Steam or water spray.

48—GAS, HEATING AND ILLUMINATING, subclass 128, Purifiers, and the subclasses thereunder.

75—METALLURGY, subclass 30, Fume-arresters.

83—MILLS, subclasses 47, Dust-collectors, Reciprocating, and 48, Dust-collectors, Rotating.

98—PNEUMATICS, subclass 39, Ventilation, Air moistening, cooling, and cleansing, and the subclasses thereunder.

145. SPARK AND SMOKE CONDUCTORS. Devices applied to the stack or smoke-box of a locomotive for conducting the smoke and sparks and discharging them upon the ground or into the air in such a direction as not to discharge upon the train. They need not necessarily be conduits but may be shields or deflectors to turn the smoke and sparks away from the train. Nor are these devices limited to use upon

CLASS 110—Continued.

locomotives, but may be applied to a stationary-boiler stack or any chimney. Includes conduits applied to the stack of a boiler used for threshing purposes on a farm, the conduit being carried at a distance from the boiler or engine and discharging into a water-receptacle to prevent the sparks setting fire to the straw.

Search Class—

110—FURNACES, subclasses 50, Furnace structure, Smoke and gas return, Locomotive, and 120, Spark-arresters, Furnace-conductor.

146. SPARK AND SMOKE CONDUCTORS, TRAIN. Devices having a conduit extending from the smoke-discharge end of the locomotive past the cars of the train to carry away the smoke and sparks and discharge them at the rear of the train.

Note.—This subclass does not include patents where the heat from the smoke is made use of to heat the cars, such devices being classified in class 237, **HEAT DISTRIBUTING SYSTEMS**, subclasses 11, Train, Smoke, and 12, Train, Steam.

147. DRAFT-REGULATORS. Devices located so as to act directly on the products of combustion after they leave the fire-box designed to affect the velocity of said products. Also combination devices of the character above described coupled with devices that act directly on the fire as blowers for the fire, in combination with steam or air jets that either increase or decrease the draft. Here are classified exhaust mechanism of locomotives that have claims to the form of exhaust-nozzle.

Note.—Where air or steam is injected into the products for the sole purpose of more completely consuming the smoke and gases, such devices are classified in Feeding air or Feeding steam.

Ordinary dampers for stoves and furnaces and their operating mechanism are classified in class 126, **STOVES AND FURNACES**, subclass 285, Dampers, and subclasses thereunder.

Search Classes—

110—FURNACES, subclass 2, Furnace structure, Automobile, for draft-regulators especially adapted for automobiles.

98—PNEUMATICS, subclasses under Chimney-cowls, and 30, Ventilating-chimneys.

230—AIR AND GAS PUMPS, subclass 13, Fluid-piston, Injectors and aspirators.

236—DAMPERS, AUTOMATIC.

148. DRAFT-REGULATORS, SEPARATION OF GASES. Devices for separating the heavy gases and drawing them off, allowing only the lighter gases to pass through the stack.

149. DRAFT-REGULATORS, EXTERNAL EXHAUST AND BLOWER. Engines with an external exhaust that does not affect the draft with some form of blower for the fire, either a fan or steam-jet blower being used to force air to the grate or an injector being placed in the smoke-box or flues to increase the draft.

Search Class—

110—FURNACES, subclasses 69, Furnace structure, Feeding air and steam, Undergrate, and 70, Furnace structure, Feeding air and steam, Undergrate, Locomotive, for feeding air or steam under the fire; 150 Draft-regulators, Steam-injector, for auxiliary blowers; 156, Draft-regulators, Exhaust-nozzle, Shunt-pipe.

150. DRAFT-REGULATORS, STEAM-INJECTOR. Devices where steam is injected into the path of the products of combustion to regulate its velocity, but does not include exhaust-mechanism nozzles.

151. DRAFT-REGULATORS, EXHAUST-NOZZLE. Exhaust-nozzles for engines located in the smoke box or stack to affect the draft of the fire.

152. DRAFT-REGULATORS, EXHAUST-NOZZLE, VARIABLE-DISCHARGE. Devices where the discharge of steam varies as to the velocity with which it is discharged or the quantity that is discharged therethrough.

Search Class—

137—WATER DISTRIBUTION, subclasses 17, Nozzles, and the subclasses thereunder, and 80, Sprayers, and the subclasses thereunder.

153. DRAFT-REGULATORS, EXHAUST-NOZZLE, VARIABLE-DISCHARGE, BOILER CONTROLLED. Exhaust-nozzles where the velocity of the steam is varied by boiler-pressure.

154. DRAFT-REGULATORS, EXHAUST-NOZZLE, VARIABLE-DISCHARGE, EXHAUST-CONTROLLED. Exhaust-nozzles where the amount of steam or its velocity is controlled by the pressure of steam in the exhaust-nozzle, so as to make a more even draft through the boiler-flues.

155. DRAFT-REGULATORS, EXHAUST-NOZZLE, AIR-FEED. Exhaust-nozzles having provision for admitting air to the current of steam in the nozzle for lessening its injector effect on the draft. The draft is generally admitted to the nozzle from outside the smoke-box; but air or gas may be admitted to the nozzle from the smoke-box.

Note.—This subclass is differentiated from subclass 164, Draft-regulators, Lift-pipe, in which may be found nozzles admitting the furnace-gases to the path of the steam in the nozzle, in that the lift-pipes accelerate the draft, while the air-feed nozzle retards the draft.

Search Class—

110—FURNACES, subclass 164, Draft-regulators, Lift-pipe.

CLASS 110—Continued.

156. DRAFT-REGULATORS, EXHAUST-NOZZLE, SHUNT-PIPE. Exhaust mechanism where the draft is varied by admitting the exhaust-steam to a separate pipe or pipes that discharge outside the stack or at different points in the stack, at the desire of the engineer, or automatically.

Search Classes—

110—FURNACES, subclass 149, Draft-regulators, External exhaust and blower.

237—HEAT DISTRIBUTING SYSTEMS, subclass 12, Train, Steam.

157. DRAFT-REGULATORS, SMOKE-BOX, FEEDING AIR. Devices for admitting air to the smoke-box or base of stack to retard the draft.

Search Class—

110—FURNACES, subclass 131, Spark-arresters, Stack, Feeding air.

158. DRAFT-REGULATORS, SMOKE-BOX, FEEDING AIR, DOOR-OPERATED. Devices for admitting air to the smoke-box where the air-opening valve is controlled by movement of the furnace-door.

Search Classes—

110—FURNACES, subclasses 55, Furnace structure, Feeding air and steam, Time-limit, and 174, Doors, Feeding air and steam.

126—STOVES AND FURNACES, subclass 286, Dampers, Distance operating devices, and subclasses thereunder.

159. DRAFT-REGULATORS, STACK, PORTABLE. Devices that are intended to be applied to a stack for a limited time to assist the draft, especially in firing up a locomotive.

160. DRAFT-REGULATORS, STACK, AIR-JET. Devices for forcing a jet of air into a stack or chimney to regulate the draft by induction.

Search Classes—

110—FURNACES, subclasses 131, Spark-arresters, Stack, Feeding air, and 162, Draft-regulators, Fan-exhaust.

98—PNEUMATICS, subclasses under Chimney-cowls.

161. DRAFT-REGULATORS, STACK, AIR-JET, STEAM-INJECTED. Devices for forcing air into a stack by a jet of steam.

Search Classes—

110—FURNACES, subclasses 69, Furnace structure, Feeding air and steam, Undergrate, and 131, Spark-arresters, Stack, Feeding air.

98—PNEUMATICS, subclasses under Chimney-cowls; 29, Stove-pipe-ventilators, and 30, Ventilating-chimneys.

230—AIR AND GAS PUMPS, subclass 13, Fluid-piston, Injectors and aspirators.

162. DRAFT-REGULATORS, FAN-EXHAUST. Devices where the products of combustion or a part of them are drawn through a fan to increase the draft.

Search Classes—

110—FURNACES, subclass 159, Draft-regulators, Stack, portable, for portable fans designed to be applied to a smoke-stack to assist the draft of the fire and capable of being readily detached, and 137, Spark-arresters, Stack, Rotary baffle.

98—PNEUMATICS.

163. DRAFT-REGULATORS, DAMPER. Movable devices in the path of the products of combustion for regulating the cross-sectional area of said path or for closing one path in order to pass them through another or longer course.

Note.—This subclass does not include dampers in the outlet-flue or stack with its operating mechanism, which are classified in class 126, **STOVES AND FURNACES**, 183, **DAMPERS**, and subclasses thereunder.

Search Classes—

110—FURNACES, subclasses 26, Furnace structure, Double fire-box, Alternate smoke-return, Over fire; 27, Furnace structure, Double fire-box, Alternate smoke-return, Under fire; 55, Furnace structure, Feeding air and steam, Time-limit; 100, Furnace structure, By-pass flue, and 123, Spark-arresters, Smoke-box, Draft-regulator.

126—STOVES AND FURNACES, subclass 285, Dampers.

236—DAMPERS, AUTOMATIC.

164. DRAFT-REGULATORS, LIFT-PIPE. Inventions limited to a lift or petticoat pipe generally used in the smoke-box of a locomotive or claims to the combined exhaust-nozzle and lift-pipe and annular nozzles providing a passage for the smoke through the center of the ring.

Search Class—

110—FURNACES, subclasses 123, Spark-arresters, Smoke-box, Draft-regulator; 126, Spark-arresters, Smoke-box, Vertical drum, and 155, Draft-regulators, Exhaust-nozzle, Air-feed.

165. ASH RECEIVING AND HANDLING DEVICES. Devices for receiving and removing ashes, including ash-pit structures, ash-pans, and conveyers when furnace structure is included.

Note.—Devices of a character designed for domestic stoves and furnaces are classified in class 126, **STOVES AND FURNACES**, subclass 242, Ash discharge and collecting, and subclasses thereunder.

Search Classes—

72—MASONRY, subclass 26, Ash-chutes.

83—MILLS, subclass 56, Ore and coal, Sifters and screens.

193—CONVEYERS, for form of conveyer.

CLASS 110—Continued.

166. **ASH RECEIVING AND HANDLING DEVICES, ASHPANS.** Receptacles under a furnace-grate for receiving the ashes as they fall therefrom, except the ash-pit itself. The pan must be a removable receptacle suspended from the furnace or resting on a support beneath the grate or permanently attached to the furnace, as in some locomotive structures.

Note.—This minor subclass does not include ash-pans designed for domestic stoves and furnaces, which are classified in class 126, **STOVES AND FURNACES**, subclass 242, Ash discharge and collecting, and subclasses thereunder.

167. **ASH RECEIVING AND HANDLING DEVICES, ASHPANS, DUMPING.** This minor subclass is made broad enough to include all mechanical devices for emptying the ash-pan, except where the pan is cleaned by a fluid jet, including pans having scrapers or carriers, valves in the bottom for allowing the ashes to fall out when opened, or pans allowing the whole bottom to swing down to dump the ashes.

Search Class—

- 105—RAILWAY ROLLING-STOCK, the subclasses under Cars, Dumping.

168. **ASH RECEIVING AND HANDLING DEVICES, ASHPANS, DUMPING, CONJOINED FLOOR-SECTIONS.** Pans whose bottoms are made of a plurality of sections pivoted at each end and connected to a common operating-bar.

Search Class—

- 105—RAILWAY ROLLING-STOCK, subclasses under Cars, Dumping.

169. **ASH RECEIVING AND HANDLING DEVICES, ASHPANS, DUMPING, RECIPROCATING, DISCHARGE-VALVE.** Ash-pans that dump the contents by reciprocating one or more valves in the bottom of the pan.

Search Class—

- 105—RAILWAY ROLLING-STOCK, subclasses under Cars, Dumping.

170. **ASH RECEIVING AND HANDLING DEVICES, ASHPANS, DUMPING, SCRAPER.** Ash-pans that have a scraper for pushing the contents out of the pan.

171. **ASH RECEIVING AND HANDLING DEVICES, ASHPANS, STEAM AND WATER ATTACHMENTS.** Devices where water or steam is injected into the ash-pan for the purpose of ejecting the ashes or extinguishing sparks.

172. **FRONTS.** Constructions for furnace-fronts in general unless boiler construction is involved.

Note.—Patents including door structures and furnace-fronts are classified here and the door features cross-referenced to their proper subclasses under Doors.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclass 497, Fronts, and subclasses thereunder.

173. **DOORS.** Closures for openings in furnace-walls, except such as are noted below.

Note.—When air or steam is fed to the furnace for a limited time, see in this class, subclass 55, **FURNACE STRUCTURE, FEEDING AIR AND STEAM, TIME-LIMIT.**

Search Classes—

- 110—FURNACES, subclasses 5, Furnace structure, Straw burners and feeders, and 172, Fronts.
25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclasses 1, Miscellaneous, and 151, Kilns, Furnaces.
48—GAS, HEATING AND ILLUMINATING, subclasses 124, Retorts, Lids, and 125, Retorts, Lids, Rotary.
75—METALLURGY, subclass 132, Puddling-hearth, Doors and bits.
122—LIQUID HEATERS AND VAPORIZERS, subclass 498, Fronts, Doors, for doors with water circulation connected with the boiler.
126—STOVES AND FURNACES, subclass 190, Stove doors and windows, and subclasses thereunder. 107—BREAD, PASTRY AND CONFECTION MAKING, subclass 65, Baker's Ovens, Doors.
202—CHARCOAL AND COKE, subclass 6, Coke, Ovens, Doors.

174. **DOORS, FEEDING AIR AND STEAM.** Doors through which air and steam are fed to the fire and also patents where air or steam is fed to the fire when the valve controlling the admission of the fluid is operated by the door, whether the fluid passes through the door or not, but does not include air or steam feeding devices with a time-limited cut-off.

Search Class—

- 110—FURNACES, subclasses 55, Furnace structure, Feeding air and steam, Time-limit, and 175, Doors, Feeding air.

175. **DOORS, FEEDING AIR.** Doors designed to admit air to the furnace either by ports or conduits through the door structure or having means for keeping the door partly open where the construction is especially adapted for admitting air other than by simply opening a door of common construction.

Search Classes—

- 110—FURNACES, subclasses 55, Furnace structure, Feeding air and steam, Time-limit, and 174, Doors, Feeding air and steam.
126—STOVES AND FURNACES, subclass 193, Stove doors and windows, Feeding air.

176. **DOORS, OPERATORS.** Devices for opening and closing doors aside from the ordinary latch.

Search Classes—

- 110—FURNACES, subclass 175, Doors, Feeding air.
39—FENCES, subclasses under Gates, Openers, and those under Gates, Swinging.

CLASS 110—Continued.

177. **DOORS, OPERATORS, MOTOR.** Devices for opening or closing doors by a motor.

Search Classes—

- 39—FENCES, subclasses under Gates, Openers, and under Gates, Swinging.
138—HYDRAULIC MOTORS, subclasses 9, For jacks, and 10, For presses.

178. **DOORS, OPERATORS, PEDAL.** Doors that are opened or closed by foot-power directly without the interposition of a motor.

Search Classes—

- 110—FURNACES, subclass 177, Doors, Operators, Motor.
39—FENCES, subclasses under Gates, Openers, and under Gates, Swinging.

179. **DOORS, FLUID-SCREENS.** Devices for preventing the heat, gases, or flames from passing out of the furnace when the door is opened either by a spray of steam, air, or water or by causing air to be drawn into the door or having means to draw the gases through a by-pass when the door is opened. These devices also serve to prevent the cold outside air from cooling the boiler.

Search Classes—

- 110—FURNACES, subclass 163, Draft-regulators, Damper, for devices for preventing the chilling of the fire and boiler-flues.
48—GAS, HEATING AND ILLUMINATING, subclass 87, Generators, Cupola, Accessories.

180. **DOORS AND CASINGS, COOLING.** Doors and casings that are kept cool by the circulation of steam or air through them, but does not include doors and casings where the fluid after passing through them is fed to the fire.

Search Classes—

- 110—FURNACES, subclass 182, Door casings and arches, Feeding air.
75—METALLURGY, subclass 132, Puddling-hearth, Doors and bits.
122—LIQUID HEATERS AND VAPORIZERS, subclass 497, Fronts, and subclasses thereunder.
202—CHARCOAL AND COKE, subclass 6, Coke, Ovens, Doors.

181. **DOOR CASINGS AND ARCHES.** Construction of casings and arches for furnace doors.

Search Classes—

- 110—FURNACES, subclasses 99, Furnace structure, Arches, and 180, Doors and casings, Cooling, for casings containing conduits.
72—MASONRY, subclasses 20, Stone and brick setting, and 27, Building-blocks.

182. **DOOR CASINGS AND ARCHES, FEEDING AIR.** Arches and casings with circulation-conduits through which air or steam are passed to be fed to the furnace.

Note.—Patents for casings having conduits for cooling them through which air, steam or water circulates, but such steam or air not passing into the furnace, are classified in subclass 180, Doors and casings, Cooling.

Search Classes—

- 110—FURNACES, subclass 55, Furnace structure, Feeding air and steam, Time-limit.
126—STOVES AND FURNACES, subclass 112, Hot-air furnaces, Feeding air.

183. **SMOKE-PURIFIERS.** Devices not included above in the subclasses 142, Spark-arresters, Stack, Steam or water spray; 143, Spark-arresters, Stack, Water-receptacle, nor 144, Spark-arresters, Water-receptacle, for preventing the visible particles of combustion from passing into the atmosphere, by washing the gases either by a steam or a water spray or by passing the gases through a body of water.

Note.—Devices for purifying illuminating-gas, are classified in class 48, GAS, HEATING AND ILLUMINATING.

When provision is made for the recovery of vaporized metals from smoke in a metallurgical furnace, such patents are classified in class 75, METALLURGY.

Devices for moistening and purifying air are classified in class 98, PNEUMATICS, under Ventilation.

See discussion of smoke-purifiers and spark-arresters under subclass 142, Spark-arresters, Stack, Steam or waterspray.

Search Classes—

- 110—FURNACES, subclasses 128, Spark-arresters, Smoke-box, Water-box, Water receptacle; 142, Spark-arresters, Stack, Steam or water spray; 143, Spark-arresters, Stack, Water-receptacle, and 144, Spark-arresters, Water-receptacle.
48—GAS, HEATING AND ILLUMINATING, subclass 128, Purifiers, and the subclasses thereunder, especially 135, Purifiers, Washer and scrubber, Spray.
75—METALLURGY, subclass 30, Fume-arresters.
83—MILLS, subclasses 47, Dust-collectors, Reciprocating, and 48, Dust-collectors, Rotating.
98—PNEUMATICS, subclass 39, Ventilation, Air moistening, cooling and cleansing, and subclasses thereunder.

184. **SMOKE-STACKS.** Metal smoke-stacks of locomotives and portable boilers.

Search Classes—

- 110—FURNACES, subclasses under Spark-arresters, and also subclass 160, Draft-regulators, Stack, Air-jet.
72—MASONRY, subclass 18, Hollow-tile walls, and also subclass 19, Smoke and air flues, for chimneys made of masonry, and large metal stacks.
98—PNEUMATICS, subclass 30, Ventilating-chimneys.
104—RAILWAYS, subclass 208, Yards and plants, Smoke-jacks.
114—SHIPS, subclass 187, Smoke-stacks.

CLASS 113.—SHEET-METAL WARE, MAKING.

DEFINITIONS.

Class.

Machines and processes for shaping, seaming, and soldering sheet-metal receptacles, conduits, and other hollow articles, also machines for forming and compressing seams of roofing-sheets, and all machines and processes for uniting articles by means of solder.

This class does not include the mere bending of sheet metal, which is found in class 153, METAL-BENDING, nor forging, in which there is a considerable flow of metal, for which see class 78, METAL FORGING AND WELDING.

This class also includes machines for die-shaping dry-paper articles.

Subclasses.

1. MISCELLANEOUS. Sheet-metal-working machines which are not otherwise classifiable.

2. BOTTLE-CAPPING, DIE. Machines which force metallic caps within or upon the necks of bottles by means of simple dies.

Search Class—

113—SHEET-METAL WARE, MAKING, subclass 16, Can-making machines, Head-seaming, Die.

3. BOTTLE-CAPPING, DIE, FILLERS AND FORCERS. Machines which force or compress metallic caps upon the necks of bottles by means of elastic-faced dies or by means of a surrounding chamber of fluid.

Search Class—

113—SHEET-METAL WARE, MAKING, subclass 44, Die-shaping, Fillers and forcers.

4. BOTTLE-CAPPING, DIE, SECTIONAL. Machines which force metallic caps within or upon the necks of bottles by means of sectional dies.

Search Class—

113—SHEET-METAL WARE, MAKING, subclass 18, Can-making machines, Head-seaming, Die, Sectional.

5. BOTTLE-CAPPING, ROTARY TOOL. Machines in which metallic caps are secured within or upon the necks of bottles by means of a rotating tool, also by rotating the bottle against a stationary tool.

Search Classes—

113—SHEET-METAL WARE, MAKING, subclasses 24, Can-making machines, Head-seaming, Roller, Stationary chuck, Rotary seaming-tool, External; 25, Can-making machines, Head-seaming, Roller, Stationary seaming-tool, Internal, and 52, Spinning.

153—METAL-BENDING, subclasses 81, Pipe expanders and flangers, Traveling, Rotary, and 82, Pipe expanders and flangers, Traveling, Rotary, Wedge-feed.

6. BOTTLE-CAPPING, STRAP-COMPRESSOR. Machines in which metallic caps are secured upon the necks of bottles by means of one or more straps which encompass the neck of the bottle and press the cap into place.

7. CAN-MAKING MACHINES. Machines adapted to form a can-body from a blank and secure the heads upon the same; also miscellaneous machines for making cans not classifiable in other subclasses of can-making machines.

8. CAN-MAKING MACHINES, BODY-FORMING AND SIDE-SEAMING. Machines which form a sheet-metal blank into a can-body and side-seam the same.

Search Class—

113—SHEET-METAL WARE, MAKING, subclass 7, Can-making machines, and the other subclasses under 8, Can-making machines, Body-forming and side-seaming.

9. CAN-MAKING MACHINES, BODY-FORMING AND SIDE-SEAMING, SOLDERING. Machines in which the can-body is formed and the side seam locked and soldered.

Search Class—

113—SHEET-METAL WARE, MAKING, subclasses 7, Can-making machines, and 10, Can-making machines, Body-forming and side-seaming, Soldering, Blank-feeding.

10. CAN-MAKING MACHINES, BODY-FORMING AND SIDE-SEAMING, SOLDERING, BLANK-FEEDING. Machines which have automatic mechanism for feeding a sheet-metal blank to a mechanism which forms the blank into a can-body, locks the side seam, and solders the same.

Search Class—

113—SHEET-METAL WARE, MAKING, subclass 7, Can-making machines.

CLASS 113—Continued.

11. CAN-MAKING MACHINES, BODY-FORMING AND SIDE-SEAMING, BLANK-FEEDING. Machines which form a sheet-metal blank into a can-body and side-seam the same and which have also automatic means for feeding the blank to the forming and seaming mechanism.

Search Class—

113—SHEET-METAL WARE, MAKING, subclasses 7, Can-making machines; 10, Can-making machines, Body-forming and side-seaming, Soldering, Blank-feeding, and 33, Tube-making.

12. CAN-MAKING MACHINES, SIDE-SEAMING. Machines which fold and compress the side seams of can-bodies. These machines have no special mechanism for feeding the blanks or for forming the can-bodies.

13. CAN-MAKING MACHINES, HEAD-SEAMING, SOLDERING. Machines which seam the heads upon cans and also solder the head-seam.

Search Class—

113—SHEET-METAL WARE, MAKING, subclass 7, Can-making machines.

14. CAN-MAKING MACHINES, HEAD-SEAMING, FEEDING AND APPLYING. Machines which have means for feeding can bodies and heads to the head-applying devices and have also means for crimping or seaming the can-heads upon the body.

Search Class—

113—SHEET-METAL WARE, MAKING, subclass 7, Can-making machines.

15. CAN-MAKING MACHINES, HEAD-SEAMING, RIP-SEAM MAKING. Machines for making rip-seams for cans including key-opening seams provided with wire or strip cutters and also machines for making weakened lines in cans.

16. CAN-MAKING MACHINES, HEAD-SEAMING, DIE. Machines for seaming heads upon cans by means of a simple die.

17. CAN-MAKING MACHINES, HEAD-SEAMING, DIE, AXIAL ROLLING. Machines in which cans are axially rolled over a die-track by means of a traveling carrier and the flange of the can-heads thereby crimped upon the bodies.

18. CAN-MAKING MACHINES, HEAD-SEAMING, DIE, SECTIONAL. Machines which seam heads upon cans by means of a sectional expansible die.

Search Classes—

113—SHEET-METAL WARE, MAKING, subclass 4, Bottle-capping, Die, Sectional.

153—METAL-BENDING, subclasses 19, Angular, Pivoted bender, Bed-clamped work, Rotary, and 80, Pipe expanders and flangers, Non-traveling, Segmental expander.

19. CAN-MAKING MACHINES, HEAD-SEAMING, ROLLER. Machines in which can-heads are seamed upon can-bodies by means of a roller-tool, such as a tinner's roll.

Search Class—

153—METAL-BENDING, subclasses 9, Beading and crimping rolls; 30, Angular, Roll, Flanging, Tinner's rolls, and 59, Curving or straightening, Roll, Edge-curling.

20. CAN-MAKING MACHINES, HEAD-SEAMING, ROLLER, ROTARY CHUCK, PATTERN-CONTROLLED TOOL. Machines in which the can is carried by a rotary chuck into the field of a rotatable roller seaming-tool and the seaming-tool advanced toward and retracted from the axis of the chuck by means of a pattern-cam. These machines are mainly for seaming rectangular cans.

21. CAN-MAKING MACHINES, HEAD-SEAMING, ROLLER, ROTARY CHUCK, PATTERN-CONTROLLED TOOL, AUTOMATIC CLUTCH. Same as above, with the addition of an automatic clutch mechanism for operating the chuck or tool.

22. CAN-MAKING MACHINES, HEAD-SEAMING, ROLLER, ROTARY CHUCK, LATERALLY-ROCKING TOOL-HOLDER. Machines in which the can-body is supported in a rotary chuck and a roller seaming-tool rocked at right angles to the direction in which it travels along the seam in such a manner as to fold over and compress the seam.

23. CAN-MAKING MACHINES, HEAD-SEAMING, ROLLER, ROTARY CHUCK, STATIONARY SEAMING-TOOL. Machines in which the can is supported by a rotary chuck which coöperates with a non-revoluble roller-tool or series of roller-tools to seam the head.

CLASS 113—Continued.

24. CAN-MAKING MACHINES, HEAD-SEAMING, ROLLER, STATIONARY CHUCK, ROTARY SEAMING-TOOL, EXTERNAL. Machines in which the can is held in a stationary chuck and the head seamed on by means of a traveling roller-tool which turns the seam outside the periphery of the can-body.

Search Class—

113—SHEET-METAL WARE, MAKING, subclass 5, Bottle-capping, Rotary tool.

25. CAN-MAKING MACHINES, HEAD-SEAMING, ROLLER, STATIONARY CHUCK, ROTARY SEAMING-TOOL, INTERNAL. Machines in which the can is held in a stationary chuck and the head seamed on by means of a traveling roller-tool which turns the seam within the periphery of the can-body.

Search Class—

153—METAL-BENDING, subclass 82, Pipe expanders and flangers, Traveling, Rotary, Wedge-feed.

26. CAN-MAKING MACHINES, HEAD FEEDING AND APPLYING, BODY-FEEDING, CHUTE. Machines in which the can-body is fed along a chute or mandrel to head feeding and applying mechanisms.

Search Class—

113—SHEET-METAL WARE, MAKING, subclasses 33, Tube-making, and 63, Soldering, Cans, Side-seam, Reciprocating carrier, for the feeding mechanism.

27. CAN-MAKING MACHINES, HEAD FEEDING AND APPLYING, BODY-FEEDING, ENDLESS-CHAIN-CARRIER. Machines in which the can-body is carried to head feeding and applying mechanisms by means of an endless-chain carrier.

Search Class—

113—SHEET-METAL WARE, MAKING, subclass 60, Soldering, Cans, Side-seam, for the carrier.

28. CAN-MAKING MACHINES, HEAD FEEDING AND APPLYING, BODY-FEEDING, ROTARY-DRUM CARRIER. Machines in which a drum rotatable about a substantially horizontal axis, provided with means for engaging a can-body, transfers the can-body to head feeding and applying mechanisms.

Search Class—

113—SHEET-METAL WARE, MAKING, subclasses 60, Soldering, Cans, Head-seam, Rotary chuck, Bath; 70, Soldering, Cans, Head-seam, Rotary chuck, Flame, and 71, Soldering, Cans, Head-seam, Rotary chuck, Soldering-iron, for the carrier.

29. CAN-MAKING MACHINES, HEAD FEEDING AND APPLYING, BODY-FEEDING, ROTARY TABLE-CARRIER. Machines in which the can-body is carried to head feeding and applying mechanisms by means of a table-carrier rotatable about a substantially vertical axis.

Search Class—

113—SHEET-METAL WARE, MAKING, in the subclasses under Soldering, Cans, Side-seam, Rotary table-carrier, and those under Soldering, Cans, Head-seam, Rotary chuck, Rotary table-carrier, for the carrier.

30. CAN-MAKING MACHINES, HEAD-APPLYING. Machines for placing heads upon can-bodies by means of force, there being no special means for feeding either the can-body or the head.

Search Class—

113—SHEET-METAL WARE, MAKING, all subclasses under the subtitle Can-making machines, Head feeding and applying, Body-feeding, and 2, Bottle-capping, Die.

31. CAN-MAKING MACHINES, HEAD-APPLYING, SECTIONAL GUIDE. Machines which have expansible guides for directing the can-body into the head, or vice versa.

Search Class—

113—SHEET-METAL WARE, MAKING, all subclasses under Can-making machines, Head feeding and applying, Body-feeding, and 4, Bottle-capping, Die, Sectional.

32. PENS AND PENHOLDERS. Machines and processes for making pens and penholders.

33. TUBE-MAKING. Includes machines and processes for making tubes from sheet metal not classifiable in other subclasses.

Search Classes—

113—SHEET-METAL WARE, MAKING, subclasses 7, Can-making machines; 10, Can-making machines, Body-forming and side-seaming, Soldering, Blank-feeding, and 11, Can-making machines, Body-forming and side-seaming, Blank-feeding.

80—METAL-ROLLING, subclass 15, Tubes, Skelping.

153—METAL-BENDING, subclass 32, Curving or straightening.

34. TUBE-MAKING, SIDE-SEAM COMPRESSING. Machines for compressing the interlocked edges of the side-seam of a sheet-metal tube by means of a die or by means of a roller adapted to pass over the seam.

Search Class—

113—SHEET-METAL WARE, MAKING, subclasses 7, Can-making machines; 8, Can-making machines, Body-forming and side-seaming, and the subclasses thereunder, and 12, Can-making machines, Side-seaming.

35. TUBE-MAKING, SPIRAL-SEAMING. Machines and processes in which tubes are made from flat sheets of metal by seaming the edges of such sheets in such a manner that the seam runs spirally around the tube.

CLASS 113—Continued.

Search Classes—

78—METAL FORGING AND WELDING, subclass 86, Welding, Tubes, Spiral-wind.

93—PAPER MANUFACTURES, subclass 80, Tube-machines, Spiral-wind.

153—METAL-BENDING, subclass 73, Corrugating, Tubes, Transverse-bend.

36. TUBE-MAKING, TRANSVERSE SEAMING, DIE. Machines which form transverse seams in tubes by means of dies.

37. TUBE-MAKING, TRANSVERSE SEAMING, ROLLER. Machines which form transverse seams in tubes by means of a roller.

Search Classes—

113—SHEET-METAL WARE, MAKING, subclass 19, Can-making machines, Head-seaming, Roller.

153—METAL-BENDING, subclasses 9, Beading and crimping rolls; 30, Angular, Roll, Flanging, Tinners' rolls; 72, Corrugating, Tubes, Spiral-bend, Roll, and 73, Corrugating, Tubes, Transverse-bend.

38. DIE-SHAPING. Machines which shape sheet metal by means of dies having substantially the same contour, so that the thickness of the sheet is not materially diminished; also machines in which the dies do not have the same contour, but in which the forming of the article includes merely a shaping by dies, as in the manufacture of hollow spheres.

Search Classes—

18—PLASTICS, subclasses 19, Molding devices, Presses, Sheet-shaping, and 35, Molding devices, Molds, Sheet-shaping.

153—METAL-BENDING, subclass 23, Angular, Reciprocating bender, Pan-shaped dies.

39. DIE-SHAPING, DENTAL. Machines adapted to form dental plates and tooth-crowns by die-shaping sheet metal.

Search Class—

113—SHEET-METAL WARE, MAKING, subclass 44, Die-shaping, Fillers and forcers.

40. DIE-SHAPING, EYELETS. Machines for cutting and drawing or die-shaping eyelets from sheet metal.

Search Class—

113—SHEET-METAL WARE, MAKING, subclass 42, Die-shaping, Cutting.

- 40.5. DIE-SHAPING, LACING-STUDS. Machines and processes for forming lacing-studs from sheet metal.

Search Class—

29—METAL-WORKING, subclass 12, Special work, Lacing-stud making, for machines and processes for forming lacing-studs from wire or metal bars.

41. DIE-SHAPING, ROLLING HOLLOW BODIES. Machines having a bed or concave and a cooperating rotatable part adapted to roll hollow spheres or tubular articles.

Search Class—

80—METAL-ROLLING, subclass 18, Concave and roll.

42. DIE-SHAPING, CUTTING. Machines which shape the sheet metal by means of dies and also have means for first cutting the blank or for punching the article formed by the dies.

Search Class—

113—SHEET-METAL WARE, MAKING, subclass 40, Die-shaping, Eyelets.

- 42.5. DIE-SHAPING, CUTTING, SHOE-SHANK STIFFENERS. Machines and processes for forming metal shoe-shank stiffeners from sheet metal.

43. DIE-SHAPING, COMBINED MACHINES. Miscellaneous die-shaping machines which perform additional functions other than cutting and punching.

44. DIE-SHAPING, FILLERS AND FORCERS. Machines for shaping sheet metal by forcing the metal against the face of a die by the compression of a fluid, plastic, or resilient medium.

Search Class—

113—SHEET-METAL WARE, MAKING, subclasses 2, Bottle-capping, Die, and 39, Die-shaping, Dental.

45. DIE-SHAPING, FLUID-OPERATED. Machines in which the dies are operated by means of fluid-pressure.

Search Class—

164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 56, Cutting, Machines, Reciprocating cutter, Fluid-operated, and 95, Punching, Machines, Hydraulic.

46. DIE-SHAPING, DRAWING. Machines which draw a planchet through a bottomless die into the form of a closed tube or capsule. Cartridge-drawing machines are to be found in this class.

47. DIE-SHAPING, ROLLER AND CONCAVE. Machines in which the blank is forced by means of a roller into a die carried by a rotary chuck or concave.

48. DIE-SHAPING, EXPANDING DIE. Die-shaping machines in which one of the dies is formed in segments which are adapted to be expanded or contracted.

Search Class—

153—METAL-BENDING, subclasses 12, Angular, Combined reciprocating bender and pivoted side-shaper, and 13, Angular, Combined reciprocating bender and sliding side-shaper.

CLASS 113—Continued.

- 49.—DIE-SHAPING, DIES AND DIE-HOLDERS. Inventions in the particular form of die or in the means for holding the die.
Search Class—
 78—METAL FORGING AND WELDING, the various subclasses under subclass 60, Forging, Dies.
 164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 118, Punching, Machines, Dies and die-holders.
50. DIE-SHAPING, EJECTORS. Mechanisms for ejecting the formed article from the matrix or female die.
Search Class—
 164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 33, Cutting, Die, Dies, Blank-ejecting.
51. DIE-SHAPING, PROCESSES. Processes for manipulating or shaping sheet metal by means of dies.
Search Class—
 201—METAL-ORNAMENTING, subclass 3, Die-pressing, and the subclasses thereunder, for machines and processes for ornamenting the surface merely by impression.
52. SPINNING. Machines and processes for shaping metal between two or more relatively rotatable parts, one of which has a movement at right angles to the axis of rotation, whereby the metal is drawn or spun.
Search Class—
 113—SHEET-METAL WARE, MAKING, subclass 5, Bottle-capping, Rotary tool.
53. SPINNING, CARRIAGE-FEED, PATTERN-CONTROLLED. Machines for spinning metal having pattern-controlled feeding mechanism for directing the spinning-tool.
54. SEAMING-MACHINES, COMPRESSING AND FOLDING. Combined machines which fold the edges of sheets, unite the same, and compress the seam.
Search Class—
 153—METAL-BENDING, in appropriate subclasses, for machines which merely fold or "edge" the sheets.
55. SEAMING-MACHINES, COMPRESSING AND FOLDING, ROOFERS' CARRIAGES. Machines for seaming roofing-sheets by folding or pressing the seams by means of rollers as the machine is pushed along the roof-seam.
56. SEAMING-MACHINES, COMPRESSING AND FOLDING, ROOFERS' TONGS. Lever-operated tools which fold and compress seams of roofing-sheets.
57. SEAMING-MACHINES, COMPRESSING, DIE. Machines which compress the seam uniting the edges of the sheets by means of a die or hammer. These machines also have means for reeling the continuous sheet.
58. SEAMING-MACHINES, COMPRESSING, ROLLER. Machines which compress the seam uniting the edges of sheets by means of rollers. These machines have also means for reeling the continuous sheet.
59. SOLDERING. Miscellaneous means for uniting metal by means of either hard or soft solder.
60. SOLDERING, CANS, SIDE-SEAM. Machines for soldering the side-seams of cans not characterized by the type of conveyor indicated in the following subclasses.
Search Class—
 113—SHEET-METAL WARE, MAKING, subclasses 9, Can-making machines, Body-forming and side-seaming, Soldering, and 10, Can-making machines, Body-forming and side-seaming, Soldering, Blank-feeding.
61. SOLDERING, CANS, SIDE-SEAM, ENDLESS-CHAIN CARRIER, BATH. Machines in which the can is carried by an endless-chain carrier and the side seam caused to dip into a bath of molten solder.
Search Class—
 113—SHEET-METAL WARE, MAKING, subclass 68, Soldering, Cans, Head-seam, Axial rolling.
62. SOLDERING, CANS, SIDE-SEAM, ENDLESS-CHAIN CARRIER, SOLDERING-IRON. Machines in which the can is carried by an endless-chain carrier to a soldering mechanism comprising a soldering-iron adapted to smooth the solder and fuse the same into the side seam.
63. SOLDERING, CANS, SIDE-SEAM, RECIPROCATING CARRIER. Machines in which the can is carried along a mandrel or chute to the soldering mechanism by means of a reciprocating carrier or feed mechanism.
Search Class—
 113—SHEET-METAL WARE, MAKING, subclass 26, Can-making machines, Head feeding and applying, Body-feeding, Chute, for the carrier.
64. SOLDERING, CANS, SIDE-SEAM, ROTARY TABLE-CARRIER, BATH. Machines in which the can-body is carried by a table-carrier rotatable about a vertical axis and the side seam caused to dip in a bath of molten solder.
Search Class—
 113—SHEET-METAL WARE, MAKING, subclass 68, Soldering, Cans Head-seam, Axial rolling.

CLASS 113—Continued.

65. SOLDERING, CANS, SIDE-SEAM, ROTARY TABLE-CARRIER, FLAME. Machines in which the can-body is carried by a table-carrier rotatable about a substantially vertical axis into the field of a flame which is adapted to fuse the solder into the side seam.
66. SOLDERING, CANS, SIDE-SEAM, ROTARY TABLE-CARRIER, SOLDERING-IRON. Machines in which the can-body is carried by a table-carrier rotatable about a substantially vertical axis to a soldering mechanism which includes a soldering-iron adapted to smooth the solder and fuse it into the side seam: also rotary table-carriers for supporting the can while the side seam is soldered by hand.
67. SOLDERING, CANS, HEAD-SEAM. Miscellaneous devices for soldering the head-seam of cans not classifiable in other subclasses. Also machines for sealing cans by means of molten wax as well as solder.
68. SOLDERING, CANS, HEAD-SEAM, AXIAL ROLLING. Machines in which the can is rolled axially along a track and the head-seam soldered by rolling it through a bath of molten solder or by causing the seam to which solder has been applied to roll within the field of a heating means whereby the solder is fused into the head-seam.
Search Class—
 113—SHEET-METAL WARE, MAKING, subclasses 61, Soldering, Cans, Side-seam, Endless-chain carrier, Bath, and 64, Soldering, Cans, Side-seam, Rotary table-carrier, Bath for the conveyor.
69. SOLDERING, CANS, HEAD-SEAM, ROTARY CHUCK, BATH. Machines in which the can is rotated by means of a rotary chuck and the head-seam caused to dip and revolve in a bath of molten solder.
Search Class—
 113—SHEET-METAL WARE, MAKING, subclasses 72, Soldering, Cans, Head-seam, Rotary chuck, Endless-chain carrier, Bath, and 75, Soldering, Cans, Head-seam, Rotary table-carrier, Bath.
70. SOLDERING, CANS, HEAD-SEAM, ROTARY CHUCK, FLAME. Machines in which the can is rotated by means of a rotary chuck within the field of a flame whereby the solder is fused into the head-seam.
Search Class—
 113—SHEET-METAL WARE, MAKING, subclasses 73, Soldering, Cans, Head-seam, Rotary chuck, Endless-chain carrier, Flame, and 76, Soldering, Cans, Head-seam, Rotary chuck, Rotary table-carrier, Flame.
71. SOLDERING, CANS, HEAD-SEAM, ROTARY CHUCK, SOLDERING-IRON. Machines in which the can is rotated by means of a rotary chuck against a soldering-iron.
Search Class—
 113—SHEET-METAL WARE, MAKING, subclasses 74, Soldering, Cans, Head-seam, Rotary chuck, Endless-chain carrier, Soldering-iron; 77, Soldering, Cans, Head-seam, Rotary chuck, Rotary table-carrier, Soldering-iron, and 84, Soldering, Cans, Cap, Rotary chuck, Stationary tool.
72. SOLDERING, CANS, HEAD-SEAM, ROTARY CHUCK, ENDLESS-CHAIN CARRIER, BATH. Machines in which the can is carried by a rotary chuck mounted upon an endless-chain carrier in such a manner that the head-seam of the can is caused to dip and revolve in a bath of molten solder. Also mechanisms for tilting the can so as to solder either or both ends.
73. SOLDERING, CANS, HEAD-SEAM, ROTARY CHUCK, ENDLESS-CHAIN CARRIER, FLAME. Machines in which the can is carried by a rotary chuck mounted upon an endless-chain carrier into the field of a flame whereby the solder applied to the can is fused into the head-seam.
Search Class—
 113—SHEET-METAL WARE, MAKING, subclass 83, Soldering, Cans, Cap, Rotary chuck, Flame, Endless-chain carrier.
74. SOLDERING, CANS, HEAD-SEAM, ROTARY CHUCK, ENDLESS-CHAIN CARRIER, SOLDERING-IRON. Machines in which the can is carried by a rotary chuck mounted upon an endless-chain carrier which is intermittently moved in such a manner that the can-seam is rotated in contact with a soldering-iron.
Search Class—
 113—SHEET-METAL WARE, MAKING, subclass 85, Soldering, Cans, Cap, Rotary chuck, Stationary tool, Endless-chain carrier.
75. SOLDERING, CANS, HEAD-SEAM, ROTARY CHUCK, ROTARY TABLE-CARRIER, BATH. Machines in which the can is carried by a rotary chuck mounted upon a rotatable table-carrier in such a manner that the head-seam is caused to dip and revolve in a bath of molten solder. Also mechanisms for tilting the cans so as to solder either or both head-seams.
76. SOLDERING, CANS, HEAD-SEAM, ROTARY CHUCK, ROTARY TABLE-CARRIER, FLAME. Machines in which the can is carried by a rotary chuck mounted upon a rotary table-carrier into the field of a flame whereby the solder applied to the can is fused into the head-seam.

CLASS 113—Continued.

77. **SOLDERING, CANS, HEAD-SEAM, ROTARY CHUCK, ROTARY TABLE-CARRIER, SOLDERING-IRON.** Machines in which the can is carried by a rotary chuck mounted upon an intermittently-rotatable table-carrier and caused to contact with a soldering-iron which spreads the solder along the head-seam. Also machines having a rotary table-carrier in which the soldering is performed by hand.

Search Class—

113—SHEET-METAL WARE, MAKING, subclass 86, Soldering, Cans, Cap, Rotary chuck, Stationary tool, Rotary table-carrier.

78. **SOLDERING, CANS, HEAD-SEAM, BATH.** Machines which solder the head-seam by plunging the seam into a bath of molten solder. Also machines in which the molten solder is caused to rise from a receptacle and flow over or submerge the seam.

79. **SOLDERING, CANS, HEAD-SEAM, FLAME.** Burners and stove structures for generating heat, to which the can is adapted to be presented by hand for the purpose of fusing solder already applied to the head-seam into the seam.

80. **SOLDERING, CANS, CAP-PREPARING, SOLDER-AFFIXING, AND GASKET-APPLYING.** Machines which attach or hem a ring of solder upon a can cap or head. Also machines for applying gaskets to can-caps either by placing a formed gasket within the cap or by forming a gasket by means of the application of fluid or plastic compositions within the cap.

81. **SOLDERING, CANS, CAP.** Machines for soldering the caps on cans not classifiable in other subclasses.

82. **SOLDERING, CANS, CAP, HERMETIC.** Machines which seal the cap or head upon a filled can *in vacuo* by means of solder or molten wax, etc. Also machines for sealing the vent-hole *in vacuo* by means of solder or molten wax.

Search Class—

220—METALLIC SHIPPING AND STORING VESSELS, subclass 97, Cans, Hermetic closures, Sealers.

83. **SOLDERING, CANS, CAP, ROTARY CHUCK, FLAME, ENDLESS-CHAIN CARRIER.** Machines in which the can is carried by a rotary chuck mounted upon an endless-chain carrier into the field of a flame whereby the solder is fused into the cap-seam.

Search Class—

113—SHEET-METAL WARE, MAKING, subclass 73, Soldering, Cans, Head-seam, Rotary chuck, Endless-chain carrier, Flame.

84. **SOLDERING, CANS, CAP, ROTARY CHUCK, STATIONARY TOOL.** Machines in which the can is carried by a rotary chuck mounted upon the machine-frame and the cap-seam soldered by means of a non-rotatable soldering-tool which is caused to approach the chuck.

Search Class—

113—SHEET-METAL WARE, MAKING, subclass 71, Soldering, Cans, Head-seam, Rotary chuck, Soldering-iron.

85. **SOLDERING, CANS, CAP, ROTARY CHUCK, STATIONARY TOOL, ENDLESS-CHAIN CARRIER.** Machines in which the can is carried by a rotary chuck mounted upon an endless-chain carrier and the solder or sealing material fused into the cap-seam by means of a soldering-tool which is stationary relatively to the rotation of the chuck.

Search Class—

113—SHEET-METAL WARE, MAKING, subclass 74, Soldering, Cans, Head-seam, Rotary chuck, Endless-chain carrier, Soldering-iron.

86. **SOLDERING, CANS, CAP, ROTARY CHUCK, STATIONARY TOOL, ROTARY TABLE-CARRIER.** Machines in which the can is carried by a rotary chuck mounted upon a rotary table-carrier and the cap-seam soldered by means of a tool which is stationary relatively to the rotation of the chuck.

Search Class—

113—SHEET-METAL WARE, MAKING, subclass 77, Soldering, Cans, Head-seam, Rotary chuck, Rotary table-carrier, Soldering-iron.

87. **SOLDERING, CANS, CAP, ROTARY TOOL.** Machines in which the can is supported upon a stationary table and the cap soldered by means of a rotary soldering-tool.

88. **SOLDERING, CANS, CAP, ROTARY TOOL, ENDLESS-CHAIN CARRIER.** Machines in which the can is carried to the soldering mechanism by an endless-chain carrier and the solder or sealing material fused into the cap-seam by means of a rotary soldering-tool.

89. **SOLDERING, CANS, CAP, ROTARY TOOL, ROTARY TABLE-CARRIER.** Machines in which the can is carried to the soldering mechanism by means of a table-carrier rotatable about a substantially vertical axis and the solder fused into the cap-seam by means of a rotary soldering-tool.

90. **SOLDERING, CANS, CAP, ROTARY TOOL, SHIFTING TRAY.** Machines in which cans (usually a plurality) are carried by a tray which is moved into the soldering position by an intermittent tray-feeding device and the cap-seam soldered by a rotary soldering-tool.

CLASS 113—Continued.

91. **SOLDERING, CANS, CAP, TIPPING.** Machines which solder the vent-holes in filled cans.

Search Class—

113—SHEET-METAL WARE, MAKING, subclass 82, Soldering, Cans, Cap, Hermetic.

92. **SOLDERING, HEAT AND PRESSURE.** Machines for soldering metal having means for applying pressure to the joint being soldered. Mainly machines for brazing.

93. **SOLDERING, SOLDER-FEEDERS, LIQUID.** Mechanisms for feeding liquid solder to soldering mechanisms or for applying liquid solder to seams or to blanks.

94. **SOLDERING, SOLDER-FEEDERS, SOLID.** Mechanisms for applying solder to seams or blanks or for feeding solder against a soldering-tool. Includes feeding bar-solder and also feeding granular or comminuted solder.

95. **SOLDERING, FLUX-FEEDERS, LIQUID.** Mechanisms for applying liquid flux to a seam or to blanks to be soldered and mechanisms for passing articles through a flux-bath.

96. **SOLDERING, FLUX-FEEDERS, SOLID.** Mechanisms for feeding solid or comminuted flux to a seam or to blanks to be soldered.

97. **SOLDERING, WIPERS.** Mechanisms which remove the excess of solder or flux from a soldered joint. Devices which brush, wipe, scrape, or remove the excessive solder by a sand-blast.

98. **SOLDERING, COOLERS.** Devices for supplying a cooling means to a freshly soldered seam; also devices for maintaining a can in a desired position until the solder is hardened.

99. **SOLDERING, CLAMPS.** Devices for clamping articles to be joined by soldering or brazing not classifiable in the following subclasses.

100. **SOLDERING, CLAMPS, VESSEL.** Devices for clamping can-bodies and like articles while the seams are being soldered.

101. **SOLDERING, CLAMPS, TROUGH.** Clamping devices adapted to hold the sections of trough or gutters in place while the seams uniting the same are being soldered.

102. **SOLDERING, CLAMPS, PIPE.** Clamps adapted to hold one or more pipes in position for soldering; mainly plumbers' clamps.

103. **SOLDERING, CLAMPS, EXPANDING MANDREL.** Devices in which the article is supported by or clamped upon an expanding mandrel. Includes mainly means for supporting and gaging can-bodies while the side seams are being soldered.

104. **SOLDERING, CLAMPS, ADJUSTABLE ARMS.** Devices having two or more adjustable arms provided with clamping-jaws adapted to hold the several parts to be joined in position while being soldered; mainly jewelers' clamps and clamps for holding spectacle-rims.

105. **SOLDERING, IRONS.** Soldering implements used for the purpose of fusing solder used in uniting sheet metal.

Search Classes—

158—LIQUID AND GASEOUS FUEL BURNERS, all subclasses under subclass 24, Self-heating tools, Soldering-irons.

219—ELECTRIC HEATING AND RHEOSTATS, subclass 26, Heaters, Tools and instruments, Soldering-irons, and the subclasses thereunder.

106. **SOLDERING, IRONS, CAPPING.** Soldering-irons adapted to solder the seams of the caps of tin cans. These implements are usually provided with a cylindrical soldering-bit or means whereby the bit or tip is carried through a circular path.

107. **SOLDERING, IRONS, CAPPING, HEATERS.** Capping-irons provided with self-heating means.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, all subclasses under subclass 24, Self-heating tools, Soldering-irons, for the heating mechanism.

108. **SOLDERING, IRONS, CAPPING, HEATERS, ELECTRIC.** Capping-irons having electric self-heating means.

Search Class—

219—ELECTRIC HEATING AND RHEOSTATS, subclass 26, Heaters, Tools and instruments, Soldering-irons, for the heating mechanism.

109. **SOLDERING, IRONS, SOLDER-FEEDING.** Soldering-irons provided with means for supporting or for containing solder and supplying the same to the soldering-iron.

Search Classes—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 10, Self-heating tools, Soldering-irons, Solder-feeders.

219—ELECTRIC HEATING AND RHEOSTATS, subclass 27, Heaters, Tools and instruments, Soldering-irons, Solder-feeding.

CLASS 113—Continued.

110. **SOLDERING, SOLDER FORMS.** Solder forms adapted to be applied to the article to be soldered.
111. **SOLDERING, TOOLS AND APPLIANCES.** Miscellaneous tools and appliances used in soldering. Tinners' stakes, benches, soldering-beds, scrapers, etc.
112. **SOLDERING, PROCESSES.** Processes for uniting articles by either hard or soft solder.
113. **WORK-FEEDERS.** Miscellaneous machines for feeding blanks to the shaping or operating mechanism; also mechanisms for transferring the partly completed article from one mechanism to another.
- Search Classes—**
- 113—**SHEET-METAL WARE, MAKING,** subclasses 10, Can-making machines, Body-forming and side-seaming, Soldering, Blank-feeding, and 11, Can-making machines, Body-forming and side-seaming, Blank-feeding.
- 76—**METAL FORGING AND WELDING,** subclass 99, Work-handling mechanism, Blank-feeding.
- 164—**CUTTING AND PUNCHING SHEETS AND BARS,** subclass 116, Punching-machines, Feed mechanisms.

CLASS 113—Continued.

114. **WORK-FEEDERS, CAP AND HEAD.** Mechanisms which are adapted to feed sheet-metal can heads or caps or bottle-caps to an operating mechanism.
- Search Classes—**
- 113—**SHEET-METAL WARE, MAKING,** all subclasses under Can-making machines, Head feeding and applying, Body-feeding.
- 226—**PACKAGING LIQUIDS,** subclasses 5, Corking machines, Automatic feed, and 7, Corking-machines, Compressing, Automatic feed.
115. **WORK-FEEDERS, CAN-BODY.** Mechanisms for feeding can-bodies to head-applying machines, seaming machines, etc., and mechanisms for transferring can-bodies from one machine to another.
- Search Class—**
- 226—**PACKAGING LIQUIDS,** subclass 9, Filling-machines.
116. **PROCESSES.** Miscellaneous processes for making sheet-metal ware.

CLASS 114.—SHIPS.

DEFINITIONS.

Class.

This class includes marine vehicles and accessories, as merchant vessels, war-ships, submarines, torpedo-boats, etc., their spars, sails, and fittings specific thereto and not otherwise classifiable.

Boats, canoes, life-boats, and rafts and other small craft usually propelled by oars are separately classified in class 9, BOATS AND BUOYS.

Subclasses.

0.5. MISCELLANEOUS. Marine vehicle structures and devices not otherwise classifiable.

1. WAR-SHIPS. Ships and similar structures for offensive and defensive purposes, elements or details specific thereto, and inventions relating to the construction and building of such vessels not otherwise classifiable.

2. WAR-SHIPS, RAMS. Vessels provided with bow or stern extensions below the water-line for ramming purposes—or ships having battering-rams or augers.

Search Class—

114—SHIPS, subclass 41, Ice-breakers, Rams, for rams used in ice-breaking.

3. WAR-SHIPS, RAMS, BATTERING. Vessels having reciprocating or thrusting rams designed to batter in or puncture the hull of a vessel; also vessels provided with augers or boring devices to effect the same ends.

4. WAR-SHIPS, FLOATING BATTERIES. Floating forts designed to be anchored in harbors, usually of circular section and cylindrical or globular in form, and though such forts may have means of propulsion they differ from the general type of war-ships and form a distinctive class.

Note.—These devices differ from turrets in that turrets are fortified structures mounted upon, rotating with, or being elevated upon other structures, while floating batteries form a single structure, being rotated or elevated as a whole.

5. WAR-SHIPS, TURRET. War-ships having mounted thereon an armored short or flat tower, generally cylindrical or conical in shape, within which guns are operated. These structures usually rotate upon or are elevated or lowered on the vessel carrying them.

Search Classes—

114—SHIPS, subclass 4, War-ships, floating batteries, for revolving vessels.

61—HYDRAULIC ENGINEERING, subclass 55, Harbors, Fortifications and defenses, Turrets, for turrets designed for land fortifications.

6. WAR-SHIPS, TURRET, COMBINED ELEVATING AND ROTARY. War-ships provided with revoluble turrets that may be elevated or depressed at will.

7. WAR-SHIPS, TURRET, ELEVATING. Turrets that may be elevated or depressed on the vessel that supports them.

8. WAR-SHIPS, TURRET, ROTARY. Turrets that are revoluble upon the vessel supporting them.

9. WAR-SHIPS, ARMORED. Miscellaneous armor-clad vessels in which turret features are not claimed and which involve novelty in protected hulls or decks, etc., either through belts or sheathing of armor-plate which may be placed to form deflecting-surfaces or by means of temporary shields and screens (other than the shields of gun-mounts in class 89, ORDNANCE, subclass 36, Shields).

10. WAR-SHIPS, ARMORED, DEFLECTORS. Devices for protecting war-ships by means of armor arranged to form deflecting-surfaces to receive the impact of projectiles and cause their rebound.

Search Class—

114—SHIPS, subclass 5, War-ships, Turret, and the subclasses thereunder.

11. WAR-SHIPS, ARMORED, BELTING AND PLATING. Inventions in protecting war-ships by armor, involving the structure, assembling, and securing of armor-plates or equivalent upon the hull, decks, or elsewhere to form sheaths or belts.

12. WAR-SHIPS, ARMORED, BELTING AND PLATING, COMPOUND. Armor-plating composed of a plurality of superposed parts jointed or locked together to form an integral plate or in which the belting or plating is of a compound character formed of different materials, including buffers or equivalent, or structurally united, or in which the plating is composed of a plurality of layers of plates.

13. WAR-SHIPS, ARMORED, BELTING AND PLATING, COMPOUND, BUFFERS. Armor belting and plating in which yielding or elastic means are provided either at the backing or supports or between the elements of the compound armor or plates.

CLASS 114—Continued.

14. WAR-SHIPS, ARMORED, SCREENS AND SHIELDS.

Devices in which protection is secured to the vessel or crew by means of a screen or shield secured to the vessel or which is portable. It differs from class 89, ORDNANCE, subclass 36, Shields, in that the latter shields are a part of the gun-mount, while the devices of this subclass are a part of the vessel or are independent of the gun and its mount.

Search Classes—

114—SHIPS, subclasses 174, Ports, Stoppers, and 175, Ports, Stoppers, Gun-port.

89—ORDNANCE, subclass 36, Shields, for shields of gun-mounts.

15. WAR-SHIPS, CONCEALMENT. Means for rendering a war-ship invisible or indistinguishable at a distance by particular combinations of paints or through resemblance to surroundings.

16. SUBMARINE VESSELS. Vessels that may be operated wholly beneath the surface of the water or submergible vessels and vessels designed to travel on the bottom of the sea.

16.4. SUBMARINE VESSELS, LIFE AND VESSEL SAVING DEVICES. Submarine vessels provided with devices for saving the lives of the crew or for salvage of the vessel or cargo when sunk or submerged and unable to rise to the surface. In this subclass are properly classifiable also patents relating to detachable keels of submarines when such feature alone is claimed, but if other features are claimed, by cross-reference from superior subclasses.

Search Class—

61—HYDRAULIC ENGINEERING, subclasses 7, Diving armor; 3, Caissons, and 20, Caissons, Ship, for devices of general application relating to this art.

16.5. SUBMARINE VESSELS, LIFE AND VESSEL SAVING DEVICES, BUOYS. Submarines carrying buoys releasable by means controlled from within the vessel. These buoys are usually provided with signaling devices for indicating the position of the submerged vessel, with means for establishing or maintaining communication, supplying air or food, etc., and generally, though not necessarily, connected by cable or other means with the submerged submarine.

Search Class—

9—BOATS AND BUOYS, subclasses 9, Buoys, Wreck-indicating, and 10, Buoys, Safes.

16.6. SUBMARINE VESSELS, LIFE AND VESSEL SAVING DEVICES, ESCAPES. Submarines provided with devices for enabling the crew or passengers to escape from the sunken or submerged vessel, usually an air lock or an escape tube through which the crew may pass from the interior to the exterior of the vessel or to the surface. Air lock or egress devices of submarines, though not intended as escapes, may be found here by cross-reference.

16.7. SUBMARINE VESSELS, LIFE AND VESSEL SAVING DEVICES, ESCAPES, BOATS OR BUOYS. Submarines carrying boats or buoys connected to and in communication with the interior of the vessel and into which one or more of the crew may pass, the communicating openings closed, the boat or buoy released or detached to rise to the surface. These boats or buoys while rising or floating may still be connected to the sunken vessel by a cable or other connecting device.

Search Class—

9—BOATS AND BUOYS, subclass 4, Life-boats, Inclosed, for boats or buoys *per se*.

16.8. SUBMARINE VESSELS, LIFE AND VESSEL SAVING DEVICES, SALVAGE. Submarines having devices for saving property, the vessel itself, or another submarine, but not devices for raising a submerged vessel, which are classified in this class, subclass 44, Vessel raising and docking.

17. SUBMARINE VESSELS, TORPEDO-BOATS. Submarine boats having means for placing, launching, or discharging torpedoes.

Note.—If no means are claimed for placing or discharging torpedoes, see subclass 16, Submarine vessels, above.

18. TORPEDO-BOATS. Torpedo-boats that run on the surface or awash and that are not submergible. All have means for placing, launching, or discharging torpedoes or are themselves the carrier of the explosive.

Note.—Torpedo-boats differ from torpedoes in that they are manned and controlled by a crew, while torpedoes carry no crew, are not designed for such purpose, and are much smaller.

19. TORPEDO-BOATS, SPAR. Torpedo-boats carrying torpedoes at the end of a spar, the torpedo being exploded on contacting the hull of the vessel toward which it is directed, being launched from the spar toward the hull, or discharged at will.

CLASS 114—Continued.

20. **TORPEDOES.** Fish or automobile torpedoes, the power of propulsion being self-contained and nearly always actuating screw-propellers, which propel the torpedo on the surface or at any desired depth.

Search Classes—

- 102—AMMUNITION AND EXPLOSIVE DEVICES, subclasses 2, Torpedoes, and 23, Pyrotechnics, Rockets, for rocket-torpedoes; subclass 3, Torpedoes, Submarine mines, for submarine mines.
- 172—ELECTRICITY, MOTIVE POWER, subclass 8, Steering and propulsion, and the subclasses thereunder, unless the invention includes features specific to general torpedo structure, when it is classifiable in this subclass or the subclasses thereunder, for electrically-controlled torpedoes involving electrically-controlled apparatus for steering and propulsion, etc.
21. **TORPEDOES, EXTERNAL CONTROL.** Fish or automobile torpedoes controlled from a shore or other station through electric cables or cords for steering, the invention being specific to torpedo structure rather than to the electric features.
- Search Class—**
- 172—ELECTRICITY, MOTIVE POWER, subclass 8, Steering and propulsion, and the subclasses thereunder, for electrical features.
22. **TORPEDOES, SEPARABLE SECTIONS.** Fish-torpedoes formed of a plurality of separable sections or parts, one of which contains the explosive, the remaining sections being capable of a subsequent use.
23. **TORPEDOES, STEERING MECHANISM.** Torpedoes of this type wherein the invention relates to the steering mechanism.
- Search Classes—**
- 114—SHIPS, subclass 21, Torpedoes, External control, for other than automatic or self-contained devices.
- 172—ELECTRICITY, MOTIVE POWER, subclass 8, Steering and propulsion, and the subclasses thereunder, for electrical features.
24. **TORPEDOES, STEERING MECHANISM, GYROSCOPE.** Steering mechanisms for fish-torpedoes in which a gyroscope disk or wheel controls the steadiness of the torpedo's course, direction, speed, etc.
- Search Class—**
- 74—MACHINE ELEMENTS, subclass 78, Gyroscopes, for gyroscopes of general application.
25. **TORPEDOES, DEPTH REGULATION.** Devices for keeping torpedoes at a predetermined depth below the surface while on its course or flight.
- Search Class—**
- 114—SHIPS, subclasses 16, Submarine vessels, and 17, Submarine vessels, Torpedo-boats, for such regulating devices as are applicable to submarines.
26. **SCOWS.** Vessels of the well-known type approximately flat-bottomed or square-ended; also oyster-floats.
- Search Class—**
- 14—BRIDGES, subclass 8, Bridges, Floating, for pontoon-boats.
27. **SCOWS, DUMPING AND UNLOADING.** Scows having means for discharging a load by overturning, opening doors at bottom or sides, by tilting platforms, by conveyers, carriers, by sectional, hinged, or separable parts, or by flooding or washing away, etc.
- Search Class—**
- 214—LOADING AND UNLOADING, for loading and unloading features of general application.
28. **SCOWS, DUMPING AND UNLOADING, SECTIONAL.** Scows formed of a plurality of sections, hulls, or parts.
29. **SCOWS, DUMPING AND UNLOADING, SECTIONAL, HINGED.** Dumping-scows in which the sections are hinged together and hold the load when united and dump it when separated, the sections turning on the hinges usually placed amidships.
30. **SCOWS, DUMPING AND UNLOADING, SECTIONAL, SEPARABLE.** Dumping and sectional scows, the load being dumped by the separation of the sections.
31. **SCOWS, DUMPING AND UNLOADING, PLATFORM.** Scows carrying loads on platforms or decks rather than in holds and having means or structure to facilitate dumping or unloading.
32. **SCOWS, DUMPING AND UNLOADING, PLATFORM, TILTING.** Scows in which a platform carrying the load is adapted to be tilted and dump the load.
- Search Class—**
- 214—LOADING AND UNLOADING, subclass 11, Loading and unloading, Tilting platform, for tilting platforms of general application.
33. **SCOWS, DUMPING AND UNLOADING, PLATFORM, TILTING, CARRIERS.** Scows having tilting platforms which are movable laterally before tilting, affording greater facility in tilting the platform to discharge the load overboard.
34. **SCOWS, DUMPING AND UNLOADING, PLATFORM, CONVEYERS.** Scows of this type in which an endless belt, carrier, conveyer, or equivalent conveys and discharges the load by its movement.

CLASS 114—Continued.

35. **SCOWS, DUMPING AND UNLOADING, PLATFORM, SIDE DOORS.** Scows wherein the load is discharged by opening doors or gates at the sides of the scow, the platform usually being inclined and the load held in place by the closed gates.

36. **SCOWS, DUMPING AND UNLOADING, BOTTOM DOORS.** Dumping-scows discharging loads by the opening of doors or gates in the bottom of the scow.

37. **SCOWS, DUMPING AND UNLOADING, BOTTOM DOORS, FLOODING-GATES.** Dumping-scows having bottom doors and additional gates for admission of water to flood the load and facilitate dumping or discharge.

38. **SCOWS, DUMPING AND UNLOADING, TURNOVER.** Scows adapted to be reversed or turned over to dump the load.

39. **SAIL-BOATS.** Combinations of boats, sails, masts, rigging, spars, floats, etc., especially adapted for use in small craft or sail-boats.

Search Class—

- 114—SHIPS, subclass 123, Ballasting, Floats, for use of floats in ballasting.

40. **ICE-BREAKERS.** Vessels or boats designed and operated to break and cut up ice-floes or to open channels for the passage of vessels.

41. **ICE-BREAKERS, RAMS.** Ice-breakers adapted to break up the ice by ramming, the bow or stern structure being designed for that purpose, the cutting being produced by the blows and wedging caused by the speed and impact of the vessel.

42. **ICE-BREAKERS, CUTTERS.** Ice-breakers having saws or cutters for disrupting the ice, usually actuated by means independent of the speed of the boat or not due to the momentum of the vessel.

43. **ICE-BOATS.** Boats or vessels designed to be used on water or ice and sometimes land. The boat's structure is essential.

Search Class—

- 115—MARINE PROPULSION, subclass 1, Land and water boats, for vessels having wheels for land service.

44. **VESSEL RAISING AND DOCKING.** Miscellaneous means or devices for raising sunken or submerged vessels, floating dry-docks, or devices specific to such use.

45. **VESSEL RAISING AND DOCKING, FLOATING DRY-DOCKS.** Means for raising vessels by use of semi-submergible docks, nearly all of which are floating vessels and constructed to receive the vessel upon its bottom or upon a platform or equivalent way, the dock being raised by changing the line of flotation through buoyancy by electing or pumping water from the water-tanks or by changing ballast.

Search Class—

- 114—SHIPS, subclass 49, Vessel raising and docking, Camels, caissons, and pontoons; and subclass 53, Vessel raising and docking, Submerged, Air-tanks, Camels, caissons, and pontoons, for structures that are to be entirely submerged.

46. **VESSEL RAISING AND DOCKING, FLOATING DRY-DOCKS, SECTIONAL.** Floating dry-docks formed of a plurality of movable and independent sections that united form the dock or in which one or more sections may be used to dock other sections or vessels.

47. **VESSEL RAISING AND DOCKING, FLOATING DRY-DOCKS, END-GATES.** Integral structures provided with gates or caissons adapted to be closed and inclose the vessel in a dock, from which the water may be expelled to expose the hull of the vessel.

48. **VESSEL RAISING AND DOCKING, FLOATING DRY-DOCKS, ELEVATORS.** Floating dry-docks having a platform upon which the hull of the vessel is supported and which is elevated or depressed upon the dock by buoyant action secured by emptying water-tanks or by hoisting.

Search Class—

- 61—HYDRAULIC ENGINEERING, subclass 48, Docks, Lifting, for elevators in stationary or land dry-docks in which the elevator is usually raised by hoisting.

49. **VESSEL RAISING AND DOCKING, CAMELS, CAISSONS, AND PONTOONS.** Devices between which a vessel is raised by their buoyant action, the structures not being designed to be sunk (as in subclass 53, below). The camels, caissons, or pontoons are partially submerged by opening water-valves and the vessels secured by straps, chains, etc., and by changing the buoyancy of the structures by expelling water from tanks or on rise of tide the vessel is raised.

Search Classes—

- 114—SHIPS, subclass 53, Vessel raising and docking, Submerged, Air-tanks, Camels, caissons, and pontoons, for similar structures designed to be sunk and secured to sunken or submerged vessels.

- 9—BOATS AND BUOYS, subclass 11, Life-rafts.

50. **VESSEL RAISING AND DOCKING, SUBMERGED.** Devices for raising sunken vessels; also means for forcing air into a vessel and expelling the water after sealing up openings.

CLASS 114—Continued.

51. **VESSEL RAISING AND DOCKING, SUBMERGED, HOISTING.** Means for raising sunken vessels by hoisting or for hauling vessels off shoals or bars. The sunken vessel is hoisted toward some floating vessel which supports the hoisting apparatus.
52. **VESSEL RAISING AND DOCKING, SUBMERGED, AIR-TANKS.** Vessels, tanks, or receptacles for containing air adapted when filled to raise a sunken vessel by their combined buoyant force.
53. **VESSEL RAISING AND DOCKING, SUBMERGED, AIR-TANKS, CAMELS, CAISSONS, AND PONTOONS.** Structures adapted to receive water and be sunk, attached to sunken vessels, and have the water expelled, thus raising the vessel by buoyant force.
54. **VESSEL RAISING AND DOCKING, SUBMERGED, AIR-TANKS, INFLATABLE BAGS.** Bags or receptacles for containing air adapted to be attached or secured to or in sunken vessels when empty and by inflation raise the same by buoyancy.
55. **VESSEL RAISING AND DOCKING, SUBMERGED, SAND AND MUD LOOSENING.** Devices or means for removing the sand or mud about a submerged hull.
56. **FORM.** Inventions in the shape, cross-section, or "lines" of a vessel in contact with the water or the exterior form in general.
Search Classes—
115—MARINE PROPULSION, appropriate subclasses, for specific features involved in marine propulsion.
244—AERONAUTICS, for air ships adapted to marine use.
57. **FORM, SCREW-PROPELLER TYPE.** Inventions in the exterior form of vessels propelled by screw-propellers.
58. **FORM, PADDLE-WHEELERS.** Inventions in the form of vessels propelled by wheels.
59. **FORM, SPINDLE.** Vessels of spindle form having nearly circular cross-section amidships and tapering toward bow and stern.
60. **FORM, CANAL AND FERRY BOATS.** Inventions relating to the form of vessels designed for canal, ferry, or tow service.
Search Class—
116—MARINE PROPULSION, subclass 6, Towing, and the subclasses thereunder.
61. **FORM, DIVIDED HULL.** Types of ship form in which the ship's body is divided into a plurality of hulls or in which the hull is divided below the water-line.
Search Class—
116—MARINE PROPULSION, subclasses 22, Manual power, Catamaran, and 26, Marine pedomotors, Catamaran, for separate hulls, boats, or floats united to form so-called "catamarans."
62. **FORM, CONCAVE BOTTOM.** Forms of hull presenting a more or less concave surface to the water from bilge to bilge, bilges to keel, or longitudinally.
63. **FORM, FLAT BOTTOM.** Inventions in ship's forms in which flat bottoms are used with or without keels or in which the bottom is nearly flat or horizontal.
Search Class—
114—SHIPS, subclass 26, Scows, and the subclasses thereunder, for flat-bottom scows.
64. **FORM, DRAFTING.** Inventions involving the use of lines or curves, etc., in drafting or laying down the lines of vessels.
65. **BUILDING.** Inventions relating to the construction of vessels except war-ships or submarine types and not otherwise classifiable.
Search Classes—
114—SHIPS, subclass 56, Form, and the subclasses thereunder, for inventions in external form or water-resistance surface.
9—BOATS AND BUOYS, subclass 1, Boats, and the subclasses thereunder, especially subclasses 2, Boats, Sectional and folding; 6, Boats, Hull construction, and 6.5, Boats, Hull construction, Formers and framers, for small boats.
66. **BUILDING, OBSERVATION BOATS.** Boats having glass bottoms or windows for the purpose of viewing marine life and scenery.
- 66.5. **BUILDING, HYDROPLANE BOATS.** Boat or vessel structures or attachments therefor in which means comprising laterally extended or inclined planes, boards, fins, or a suitable form of hull are provided for increasing the speed of the boat when moving in the water, such means then operating upon the principle of the wedge or inclined plane partially to raise the boat out of the water and to diminish the amount of submerged surface that opposes resistance to speed movement through the water.
Search Class—
114—SHIPS, appropriate subclasses of submarine vessels and torpedoes, for analogous devices.
67. **BUILDING, ANTIFRICTION SURFACES.** Devices providing means for diminishing the resistance between the water and the vessel when moving through the water and effective in increasing the speed. The present types comprise friction-roller surfaces, conveyers, and air-distributing means or attachments to produce a better cutting edge.

CLASS 114—Continued.

- Search Classes—**
114—SHIPS, subclasses 232, Oil-distributors, and 233, Oil-distributors, Ship structure, for devices for distributing oils or liquids between the ship's skin and the water.
115—MARINE PROPULSION, subclass 11, Jet, and the subclasses thereunder, for vessels having means to expel air or water about the surface of the submerged hull with sufficient effect and force to propel the vessel.
68. **BUILDING, INSUBMERGIBLE VESSELS.** Vessels provided with means for preventing a vessel from sinking, involving sufficient bulkheads or compartments to keep it afloat or providing impenetrable or puncture-proof skins or sides with or without linings or fillings of waterproof or leak-stopping character.
69. **BUILDING, INSUBMERGIBLE VESSELS, LININGS AND FILLINGS.** Vessels of insubmergible or non-sinkable type having linings or fillings in the sheathing that through yielding surfaces, waterproof, or leak-stopping qualities prevent the admission of water.
70. **BUILDING, CANAL AND FERRY BOATS.** Vessels designed and constructed for the above service and including those carrying trains and cars.
Search Class—
114—SHIPS, subclass 60, Form, Canal and ferry boats, for form of boats.
71. **BUILDING, CABINS.** Inventions relating to vessels having cabin structures or means for supporting them.
Search Class—
114—SHIPS, subclass 189, Furniture, Cabins and state-rooms, for separate structures.
72. **BUILDING, FREIGHTERS.** Vessels designed for carrying, securing, and preserving freight or cargo.
Search Classes—
114—SHIPS, subclasses 26, Scows, and 70, Building, Canal and ferry boats.
214—LOADING AND UNLOADING, subclass 1, Loading and unloading.
73. **BUILDING, FREIGHTERS, BULK-CARGO.** Vessels constructed to carry cargo in bulk, as ore, grain, coal, etc., whether of the hopper type or otherwise.
74. **BUILDING, FREIGHTERS, BULK-CARGO, LIQUID.** Bulk-cargo freighters constructed to carry liquids in one or more tanks.
75. **BUILDING, FREIGHTERS, BULK-CARGO, ANTI-SHIFTING DEVICES.** Inventions relating to means for keeping the cargo from moving about during the movements of the vessel.
76. **BUILDING, FREIGHTERS, BULK-CARGO, CEILINGS AND FLOORS.** Devices for sustaining and covering cargoes, preventing access of water or moisture, etc.
77. **BUILDING, SECTIONAL.** Composite vessels constructed of a plurality of independent parts structurally united or decked to form a single vessel.
Search Class—
9—BOATS AND BUOYS, subclass 2, Boats, Sectional and folding.
78. **BUILDING, BULKHEAD AND COMPARTMENT.** Vessels having bulkheads or compartments as elements of combinations.
Search Classes—
114—SHIPS, subclass 116, Bulkheads and doors, and the subclasses thereunder, for bulkheads *per se* and doors.
9—BOATS AND BUOYS, subclasses 3, Boats, Life-boats, and 4, Boats, Life-boats, Inclosed.
79. **BUILDING, IRON.** Various types of construction for iron vessels or in which iron or metal is an essential element of the hull structure.
80. **BUILDING, IRON, CORRUGATED.** Ships in which corrugated iron is used.
81. **BUILDING, IRON, TUBULAR.** Ships in which iron tubes are used in construction.
Search Class—
9—BOATS AND BUOYS, subclass 4, Boats, Life-boats, Inclosed.
82. **BUILDING, WOOD.** Vessels in which wood is the principal material used in construction.
83. **BUILDING, BRACING AND STAYING.** Means for bracing, staying, trussing, etc., the timbers, frames, sheathing, and decks of vessels.
84. **BUILDING, SHEATHING AND PLANKING.** Various means and methods of constructing the sides of vessels, involving the use of planks or sheaths or placing additional sheaths or linings thereon or therein.
Search Class—
114—SHIPS, subclass 11, War-ships, Armored, Belting and plating, and the subclasses thereunder, for metal or armor belts or sheaths.
85. **BUILDING, DECKS.** Methods and means for constructing vessels' decks or relating thereto.

CLASS 114—Continued.

86. BUILDING, CALKING AND SEAMING. Methods and means for filling or closing the seams between planking, etc., and making them water-tight.
- Search Class—**
114—SHIPS, subclass 224, Implements, Calking, Paying, etc., for tools, implements, and machines for putting in the calking material and paying or puttying seams.
87. BUILDING, KNEES. Braces or knees used in shipbuilding.
88. BUILDING, JOINTS. Specific means or devices for uniting timbers, plates, frames, seats, and thwarts, etc.
- Search Class—**
20—WOODEN BUILDINGS, subclass 92, Splices and joints, for joints used in wooden buildings.
89. SPARS. Inventions in ships' spars, as masts, yards, booms, gaffs, etc., their attachments, connections, and manner of mounting, raising, and securing them.
90. SPARS, MASTS AND MASTING. Inventions in masts, their material, form, construction, and position, and means for securing them.
91. SPARS, MASTS AND MASTING, SWINGING. Devices for pivoting masts, adapting them to be turned down, up, around at will, or automatically.
- Search Class—**
114—SHIPS, subclass 143, Keels, Rocking, for swinging masts with rocking keels; subclass 39, Sail-boats, for swinging masts.
92. SPARS, MASTS AND MASTING, CROSS AND TRESTLE TREES. Inventions in the above-mentioned devices or their equivalents, trestle-trees being defined as fore and aft pieces secured on each side of a mast or resting on the hounds to support the rigging, cross-trees, etc. Cross-trees are athwartships timbers supported by bibbs and trestle-trees to sustain top frames or extend topgallant shrouds.
93. SPARS, MASTS AND MASTING, COATS, SHIELDS, AND STEPS. Devices for protecting a mast or the deck through which it passes, rendering the joint impervious to water, and devices or means for securing the heel or foot of the mast to the ship's timbers, keel, or keelson, etc., and fastening it in place.
94. SPARS, MASTS AND MASTING, HEADS AND IRONS. Caps and trucks or structure of the upper end or head of the mast and the various types of metal bands or irons, etc., that are secured to masts not otherwise classifiable.
- Search Class—**
114—SHIPS, subclass 98, Spars, gaffs, booms, etc., Pivoted, for "irons."
95. SPARS, YARDS. Inventions in the horizontally-disposed spars extending athwartships to which the sails of square-rigged vessels are secured, as courses, topsails, topgallant, and royal sails.
96. SPARS, YARDS, TRUSSES AND PARRELS. Devices for hanging, supporting, or securing the yards of vessels, trusses usually being of iron, to which the lower yard is pivoted or secured, and parrels being hoops, rings, or chains encircling the mast and secured to the yards.
97. SPARS, GAFFS, BOOMS, ETC. All ship-spars except masts and yards (separately classified) and their connections to masts or yards.
98. SPARS, GAFFS, BOOMS, ETC., PIVOTED. Gaffs, booms, etc., which are pivoted or the means or devices for pivoting them to the masts or other supports.
- Search Class—**
114—SHIPS, subclass 19, Torpedo-boats, Spar.
99. SPARS, GAFFS, BOOMS, ETC., CROTCHES AND SUPPORTS. Devices for supporting booms, usually a support having a crotch in its upper end in which the boom rests.
100. SPARS, SPAR-IRONS. Bands or irons of various types which are attached or secured to yards, booms, gaffs, etc., and which are not classifiable in subclasses 94, Spars, masts and masting, heads and irons; 96, Spars, yards, trusses and parrels; 98, Spars, gaffs, booms, etc., Pivoted; 101, Spars, Fair-lead-ers and chocks; 112, Sails and rigging, Mast-travelers, and 218, Bitts, cleats, and pin-rails.
101. SPARS, FAIR-LEADERS AND CHOCKS. Devices to secure the free running of ropes, cables, etc., adapted to be secured to spars or ship-timbers or structurally a part of spars or attached to tops, cross-trees, decks, pin-rails, etc.
102. SAILS AND RIGGING. Miscellaneous inventions relating to sails, standing and running rigging, setting, reefing, and furling sails, and their elements.
103. SAILS AND RIGGING, SAILS. Sails, their patterns, material, construction, etc.
- Search Class—**
114—SHIPS, subclass 39, Sail-boats.
104. SAILS AND RIGGING, SAILS, REEFING AND FURLING. Inventions for taking in or shortening sail.
105. SAILS AND RIGGING, SAILS, REEFING AND FURLING, FORE-AND-AFT SAILS. Means and methods of reefing and furling those sails which are set normally in a fore-and-aft line, as jibs, staysails, spankers, and sails of the sloop or schooner rig types.

CLASS 114—Continued.

106. SAILS AND RIGGING, SAILS, REEFING AND FURLING, FORE-AND-AFT SAILS, ROLLING. Devices for shortening fore-and-aft sails by rolling them upon rollers, said rollers being the booms, gaffs, etc., or rollers attached thereto or to stays, etc.
107. SAILS AND RIGGING, SAILS, REEFING AND FURLING, ROLLING. Devices for shortening the sails of other than fore-and-aft types on rollers, the rollers being the yards or attached thereto or to the masts.
108. SAILS AND RIGGING, SAILS, FASTENING DEVICES. Mechanical devices, usually metallic, by means of which sails are secured to their support, these devices usually being secured to the sail, and which are not classifiable in subclasses 112, 113, 114, and 115.
109. SAILS AND RIGGING, RIGGING SCREWS AND STRETCHERS. Means for tightening up or shortening shrouds or other standing rigging and permanently placed, the turning of a screw producing greater tension between the ends of shrouds, etc.
- Search Classes—**
114—SHIPS, subclass 223, Implements, Rigging, for portable rigging-screws.
57—HOISTING, subclass 15, Lifting-jacks, and the subclasses thereunder, for lifting-jacks.
110. SAILS AND RIGGING, RIGGING SCREWS AND STRETCHERS, TENSION-RELIEVERS. Rigging screws and stretchers having a yielding part adapted to yield under sudden strain or tension and of the nature of elastic couplings.
- Search Classes—**
114—SHIPS, subclasses 205, Travelers, Tension-relievers; 213, Tension-relievers, and the subclasses thereunder, for other tension-relieving devices.
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 268, Resilient connections.
54—HARNESSES, subclass 86, Elastic connections.
74—MACHINE ELEMENTS, subclass 72, Elastic tension devices.
111. SAILS AND RIGGING, RUNNING RIGGING. Means for making or setting sails, hoisting means, or relating thereto.
112. SAILS AND RIGGING, MAST-TRAVELERS. Devices by which the hoops or sail-fasteners are made to travel up and down on masts and longitudinally on yards or spars when the sails are being set or furled, etc., the sail-fastening device having an element movable in a guide, slot, or iron attached to or structurally a part of the mast or spar. This subclass includes all travelers attached to spars or which are not secured to the rail or deck.
113. SAILS AND RIGGING, HOOPS AND CONNECTIONS. The title is self-explanatory, the connections usually being a part of the hoop rather than a sail-fastener, the latter forming a part of or secured to the sail or its bolt-rope.
114. SAILS AND RIGGING, CRINGLES AND HANKS. Eyes, loops, grommets, etc., or their metal equivalents worked in or secured to the sides or leaches of sails at the bolt-ropes, the eye or loop adapted to receive the hook of a tackle or equivalent or to sail-fastening devices secured to jibs and stay-sails or fore-and-aft sails and having a plurality of loops, one for the stay, another for the bolt-rope of sails, and which are usually in the same plane and adapted to secure the free running of the sail on its stay or support.
115. SAILS AND RIGGING, CLEWS AND THIMBLES. So-called "spectacle" or other irons or devices secured to the lower corners of sails to which the sheets are attached. The spectacle-iron or iron clew is usually formed with three eyes, to which the leach-rope, the foot-rope of the sail, and the sheet or sheet-block are attached. Thimbles are also placed in this subclass and are defined as metal eyes or rings secured in a bight of rope or metal strap and used as a fair-leader to prevent chafing or to distribute the strain to the rope in which it is secured.
- Search Class—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 202, Separable fasteners, Buttonhole-protectors, for analogous devices.
116. BULKHEADS AND DOORS. Inventions in bulkheads usually adapted to form water-tight compartments of vessels.
117. BULKHEADS AND DOORS, DOORS. Bulkheads provided with doors.
- Search Classes—**
20—WOODEN BUILDINGS, subclasses under Doors, Car.
34—DRIERS, subclasses under Cylinder, and subclass 30, Retort.
48—GAS, HEATING AND ILLUMINATING, subclass 124, Retorts, Lids.
92—PAPER MAKING AND FIBER LIBERATION, subclass 7, Stock treatment, Digestive.
109—SAFES, subclass 4, Circular-door.
138—HYDRAULIC MOTORS, subclass 2, Reciprocating, for the motors for operating bulkhead-doors.
144—WOODWORKING, subclass 271, Wood-bending, Steaming.
167—MEDICINES, subclass 3, Disinfectants.
189—METALLIC BUILDING STRUCTURES, subclass 46, Doors, and appropriate subclasses thereunder.
220—METALLIC SHIPPING AND STORING VESSELS, subclass 124, Tank-closures, for similar structures.
118. BULKHEADS AND DOORS, DOORS, AUTOMATIC. Doors of bulkheads adapted for self-closure or in which the closing is automatic, as on the entry of water to a certain height, the doors being closed by swinging or rotating.

CLASS 114—Continued.

- Search Class—**
39—FENCES, subclasses 92, Gates, Openers, Car-door; 95, Gates, Openers, Swinging-door, and 96, Gates, Openers, Hatch.
119. BULKHEADS AND DOORS, DOORS, AUTOMATIC, SLIDING. Automatic closing doors of bulkheads, said doors being sliding.
- Search Classes—**
20—WOODEN BUILDINGS, subclass 19, Doors, Sliding, Miscellaneous, and subclasses 27 *et seq.*, Doors, Car.
39—FENCES, subclasses 92, Gates, Openers, Car-door; 94, Gates, Openers, Sliding-door, and 96, Gates, Openers, Hatch.
120. BULKHEADS AND DOORS, DOORS, SLIDING. Bulkhead-doors which close by sliding.
- Search Classes—**
20—WOODEN BUILDINGS, especially subclasses 19, Doors, Sliding, Miscellaneous, and 22, Doors, Car, Sliding, Miscellaneous.
39—FENCES, subclasses 92, Gates, Openers, Car-door; 94, Gates, Openers, Sliding-door, and 96, Gates, Openers, Hatch.
121. BALLASTING. Devices designed to steady and trim vessels, prevent careening, rolling, pitching, etc.
122. BALLASTING, ANTIROLLING. Means to prevent the rolling, pitching, etc., due to wave motion.
123. BALLASTING, FLOATS. Means providing buoyant floats, caissons, etc., secured to the vessel and floating alongside, preventing careening, capsizing, etc.
- Search Classes—**
114—SHIPS, subclass 39, Sail-boats, for combinations with boats, spars, sails, etc.
115—MARINE PROPULSION, subclasses 22, Manual power, Catamaran, and 26, Marine pedomotors, Catamaran, for combinations of floats with marine propelling devices.
124. BALLASTING, SHIFTING WEIGHTS. Devices in which weights are adapted to move about or to be moved to distribute the weight and change the position of the center of gravity to steady, trim, or ballast a vessel when sailing or in a seaway.
125. BALLASTING, WATER-TANKS. Devices in which ballasting is secured by water-tanks adapted to be filled or emptied, thereby distributing weight, which steadies and trims the vessel in sailing, etc.
126. BALLASTING, FINS AND BOARDS. Ballasting devices in which lee or weather boards or fins, plates, blades, etc., are adapted to project from the vessel's sides or keel laterally, obliquely, or horizontally to form a resistance-surface to prevent careening or capsizing and to enable a vessel to point or sail closer to the wind and prevent making leeway.
- Search Class—**
114—SHIPS, subclasses 135, Centerboards, Pivoted, Lateral, and 142, Keels, Bilge, for centerboards, lateral, which partake of the nature of fins and lee-boards, though used as centerboards or keels; subclass 152, Steering mechanism, Fins, for diving-fins.
127. CENTERBOARDS. Vessels having boards, plates, planks, etc., placed longitudinally amidships and projecting in line with the keel or approximate thereto and adapted to be raised or lowered to increase the resistance-surface and prevent capsizing or sudden careening, thereby steadying and trimming the vessel, usually preventing making to leeward, and enabling a vessel to point or sail closer to the wind. Centerboards are usually short in length and move in a recess or casing formed in the bottom of the vessel and raised, lowered, or adjusted at will.
128. CENTERBOARDS, STEERING. Centerboards adapted to be turned more or less obliquely or athwartships and capable or adapted to be used for steering. The devices of this type are centerboards in that they are adapted to be lowered as centerboards and serve the purpose of such or are too long to be considered as mere rudders.
- Note.**—Steering mechanism, Keel, subclass 149, this class, is limited to rudders placed upon or in line with the keel and not adapted to be raised or lowered as centerboards, or the invention relates to the means for steering rather than to the principles of centerboards.
129. CENTERBOARDS, MULTIPLE. Devices in which more than one centerboard is used and in line with the keel longitudinally.
130. CENTERBOARDS, VERTICAL-DROP AND PIVOTED-SWING. Devices in which the centerboard is adapted to be lowered vertically and then swung down to greater depth at will or tilted or turned transversely athwartships.
131. CENTERBOARDS, VERTICAL-DROP AND PIVOTED-SWING, SECTIONAL. Centerboards of vertical-drop and swing type and made of a plurality of movable parts.
132. CENTERBOARDS, PIVOTED. Centerboards pivoted at or near one end, adapted to swing down to greater or less depth, and adjustable at will.
133. CENTERBOARDS, PIVOTED, SECTIONAL. Pivoted centerboards composed of a plurality of separate parts usually movable or pivotally connected.
134. CENTERBOARDS, PIVOTED, SECTIONAL, FAN. Folding sectional boards in which the parts fold together fan-like and having a common pivot on which the sections turn.

CLASS 114—Continued.

135. CENTERBOARDS, PIVOTED, LATERAL. Centerboards displaced laterally from the keel and not in line therewith.
- Search Class—**
114—SHIPS, subclass 126, Ballasting, Fins and boards.
136. CENTERBOARDS, PIVOTED, LATERAL-SWING. Centerboards adapted to be swung obliquely across the line of the keel, but not primarily for steering.
137. CENTERBOARDS, PIVOTED, LATERAL-TILT. Centerboards that are adapted to tilt horizontally or obliquely up or down against the keel, being usually hinged at or in line therewith.
138. CENTERBOARDS, VERTICAL-DROP. Centerboards that are adapted to be raised or lowered vertically, both ends being adjustable at will either separately or simultaneously, and in most cases the centerboard is moved as a whole and not merely one end.
139. CENTERBOARDS, VERTICAL-DROP, SECTIONAL. Centerboards adapted to be moved vertically and composed of a plurality of movable parts.
140. KEELS. Keels and their structure and means and methods of securing them, whether fixed or movable.
- Note.**—Keels differ from centerboards in being longer, being usually the length of the boat, or being, when short, immovably fixed to the hull.
141. KEELS, VERTICAL ADJUSTMENT. Keel structures which are adapted to be moved vertically as a whole and which extend from bow to stern and not merely centerboards.
- Search Class—**
114—SHIPS, subclasses 130, Centerboards, Vertical-drop and pivoted-swing; 131, Centerboards, Vertical-drop and pivoted-swing, Sectional; 138, Centerboards, Vertical-drop, and 139, Centerboards, Vertical-drop, Sectional, for centerboards.
142. KEELS, BILGE. Keels laterally displaced from the true keel—*i. e.*, located upon the sides or bilge of the vessel's bottom.
143. KEELS, ROCKING. Keel structures that are adapted to rock or swing upon pivots laterally or longitudinally and which are keels rather than centerboards.
144. STEERING MECHANISM. Devices for changing the direction or speed of a vessel's motion by means of rudders, brakes, speed-retarders, and the like.
- Search Classes—**
114—SHIPS, subclass 162, Steering mechanism, Rudders, for tillers, and subclass 209, Anchors, Drags or sea-anchors, for drag-anchors for speed-retarding and steering.
21—CARRIAGES AND WAGONS, subclasses 114, Traction-engines, and 90, Motor-vehicles.
74—MACHINE ELEMENTS, subclass 79, Mechanical movements, Steering-gear type, and the subclass thereunder.
115—MARINE PROPULSION, subclasses 12, Jet, Steering; 18, Portable propellers, Steering; 21, Manual power, and subclasses thereunder; 25, Marine pedomotors, and subclasses thereunder; 29, Oscillating propellers, Steering; 32, Reciprocating propellers, Steering; 35, Screw-propellers, Steering; 50, Paddle-wheels, Steering; 64, Chain propellers, Steering and adjustable, and 67, Crank-paddles, Steering and adjustable, for various types of steering-gear involved in and combined with propelling devices.
121—STEAM-ENGINES, subclass 13, Steering mechanism, for mechanism of general application for all types involving steam-engine structures.
172—ELECTRICITY, MOTIVE POWER, subclass 8, Steering and propulsion, and the subclasses thereunder for electrical apparatus and the electrical control of steering and propelling devices.
208—VELOCIPEDS, subclass 114, Steering devices, and subclasses under Steering-wheel.
244—AERONAUTICS, subclass 29, Steering mechanism.
145. STEERING MECHANISM, SPEED-RETARDERS. Brakes or devices for retarding a ship's motion through the water and also adapted for steering when used separately, usually rudders or projecting plates attached to the vessel's sides.
- Search Class—**
114—SHIPS, subclass 209, Anchors, Drags or sea-anchors, for checking headway by drags.
146. STEERING MECHANISM, AUXILIARY. Inventions in steering apparatus having a plurality of devices for operating the rudder or steering means, one auxiliary to the other for simultaneous use, or as an aid to that in general use.
- Search Class—**
114—SHIPS, subclass 163, Steering mechanism, Rudders, Multiple, for multiple rudders, and subclass 164, Steering mechanism, Rudders, Auxiliary, for auxiliary rudders.
147. STEERING MECHANISM, PADDLES AND WHEELS. Devices in which paddle-wheels or screw-propellers, etc., are used to effect a change of direction, such devices being used for steering and not primarily for propulsion.
- Search Class—**
115—MARINE PROPULSION, subclasses 35, Screw-propellers, Steering, and 50, Paddle-wheels, Steering, for combined steering and propelling screws or wheels.

CLASS 114—Continued.

148. **STEERING MECHANISM, PADDLES AND WHEELS, CHANNELS.** Wheels or propellers placed in channels or waterways formed in the ship's side or hull to effect changes in direction by propulsion, the wheels or propellers located in the channels setting in motion a column of water or jet which by reaction changes direction of course.

Search Classes—

114—SHIPS, subclass 151, Steering mechanism, Fluid-pressure, Jet, for steering devices in which a mere jet is used without the use of wheels, etc.

115—MARINE PROPULSION, subclass 12, Jet, Steering, for combinations of propulsion and steering wheels in channels; subclasses 35, Screw-propellers, Steering, and 50, Paddle-wheels, Steering, for screws or wheels in channels or waterways.

149. **STEERING MECHANISM, KEEL.** Rudders or equivalent which are located upon or below the keel and partaking of the nature of centerboards and adapted to be turned across the keel, but not adjustable vertically.

Search Class—

114—SHIPS, subclasses 128, Centerboards, Steering, and 129, Centerboards, Multiple.

150. **STEERING MECHANISM, FLUID-PRESSURE.** Steering mechanism in which fluid-pressure is used to control the rudder, tiller, or steering-wheel, etc., or to react upon the water through which the vessel moves. It includes all pneumatic, steam, and hydraulic means specific to ships and their structure and not so claimed as to be of general application in steam-steering.

Search Classes—

114—SHIPS, subclass 146, Steering mechanism, Auxiliary, for devices in which either hand or fluid-pressure steering powers are used independently or simultaneously or for means for coupling one to the other.

121—STEAM-ENGINES, subclass 13, Steering mechanism, for steam and hydraulic devices, including specific steam-engine structures and types, unless other elements of a combination limit the device to ships.

151. **STEERING MECHANISM, FLUID-PRESSURE, JET.** Devices in which a jet of fluid, usually water, is thrown out approximately athwartships or obliquely to the keel at bow or stern, turning a vessel by the reaction due to jet propulsion.

Search Class—

115—MARINE PROPULSION, subclass 12, Jet, Steering, for combined propulsion and steering jets.

152. **STEERING MECHANISM, FINS.** Structures located at ships' ends designed to effect diving, or similar devices at the sides of vessels, any of which may be used for steering, but which are not rudders in the ordinary meaning, their action and position being similar to those of the fins of fishes.

Search Class—

114—SHIPS, subclass 126, Ballasting, Fins and boards, for ballasting-fins.

153. **STEERING MECHANISM, FOOT.** Means for steering operated by the foot or feet.

154. **STEERING MECHANISM, WHEEL-SHAFT GEARING.** Combinations of the ordinary steering-wheel or equivalent and its shaft with gears for operating the rudder, but not involving a wheel and drum.

155. **STEERING MECHANISM, WHEEL-SHAFT GEARING, SCREW.** Wheel-shaft gearing in which screws or worms are used. This subclass also includes multiple screw devices in which a plurality of screws or worms is used, provided one of them is upon the wheel-shaft, and said shaft turns another through intermediate gear, all screws being of the same type.

156. **STEERING MECHANISM, WHEEL-SHAFT GEARING, SCREW, INTERMEDIATE GEAR.** Screw-shaft gearing in which other gears are placed between the steering-wheel shaft and the screws or worms. In the miscellaneous subclass above (155) the screw or worm is located upon the wheel-shaft.

157. **STEERING MECHANISM, WHEEL-SHAFT GEARING, SCREW, RIGHT AND LEFT.** Wheel-shaft gearing involving right and left screws or worms operating the rudder, one or both of the screws being upon the wheel-shaft.

158. **STEERING MECHANISM, WHEEL-SHAFT GEARING, SCREW, RIGHT AND LEFT, INTERMEDIATE GEAR.** Steering mechanism of the above-mentioned type in which other gearing is placed between the wheel-shaft and the screws or worms, which are geared to control the rudder.

159. **STEERING MECHANISM, WHEEL-SHAFT GEARING, SEGMENTAL RACK.** Wheel-shaft gearing operating a rack of segmental shape or equivalent located upon the rudder-head and turning therewith.

160. **STEERING MECHANISM, WHEEL AND DRUM.** Steering mechanism comprising a wheel and a drum, upon which the steering ropes or chains are wound.

161. **STEERING MECHANISM, WHEEL AND DRUM, INTERMEDIATE GEAR.** Wheel and drum steering means in which gears or mechanical elements are placed between the wheel or axle and the drum.

CLASS 114—Continued.

162. **STEERING MECHANISM, RUDDERS.** Miscellaneous forms of rudders, not otherwise classifiable; also includes "tillers."

163. **STEERING MECHANISM, RUDDERS, MULTIPLE.** Steering mechanisms in which a plurality of rudders is used.

164. **STEERING MECHANISM, RUDDERS, AUXILIARY.** Rudders of permanent nature brought into use upon loss of the usual rudder. They are movable into position, but are not portable, as are *jury* rudders.

165. **STEERING MECHANISM, RUDDERS, HANGING AND SHIPPING.** Means for pivoting, securing, or supporting the rudder or its post in the bearings in combination with stern or stem posts, keel, or keelson, and devices for shipping or unshipping the rudder from its hanging or support.

166. **STEERING MECHANISM, RUDDERS, TUBULAR.** Rudders of tubular shape through which the propeller forces a jet or through which water reacts to move the stern.

Search Class—

115—MARINE PROPULSION, subclasses 42, Screw-propellers, Fitting and driving, Casings and shields; 48, Screw-propellers, Radial blades, Rims or cylinders, and 35, Screw-propellers, Steering.

167. **STEERING MECHANISM, RUDDERS, SECTIONAL.** Rudders composed of a plurality of rudders, parts, extensions, or blades designed to increase resistance-surface.

168. **STEERING MECHANISM, RUDDERS, JURY.** Portable and temporary devices designed to serve as a steering means when the usual rudders have been lost or rendered inoperative.

Search Class—

114—SHIPS, subclass 209, Anchors, Drags or sea-anchors, for drag-anchors.

169. **STEERING MECHANISM, RUDDERS, POST BEARINGS AND HEADS.** The title is self-explanatory.

170. **STEERING MECHANISM, RUDDERS, BRAKES.** Devices for relieving strain on the helmsman or rudder, adapted to yield gradually to the force of the waves, thereby preventing the breaking of the rudder or its connections.

171. **STEERING MECHANISM, RUDDERS, BRAKES, HYDRAULIC.** Brakes in which tension is relieved through fluid resistance, the fluid being compressed or retarded in its flow.

172. **STEERING MECHANISM, RUDDERS, LOCKS.** Devices for securing the steering mechanism or rudder in fixed position, and controllable at will.

173. **PORTS.** Devices including openings through ships' sides or decks not otherwise classifiable, and stoppers, shutters, and shields for closing the same.

174. **PORTS, STOPPERS.** Covers, doors, etc., for closing ports, differing from the covers of the light and air ports principally in the use to which said port is adapted and being generally larger and of rectangular construction, while the light and air ports are usually circular.

Search Classes—

34—DRIERS, subclasses under Cylinder, and subclass 30, Retort.

48—GAS, HEATING AND ILLUMINATING, subclass 124, Retorts, Lids.

92—PAPER-MAKING AND FIBER LIBERATION, subclass 7, Stock treatment, Digestive.

94—PAVING, subclass 7, Vault-covers.

109—SAFES, subclass 4, Circular-door.

137—WATER DISTRIBUTION, subclass 13, Hydrants and plugs.

144—WOODWORKING, subclass 271, Wood-bending, Steaming.

167—MEDICINES, subclass 3, Disinfectants.

220—METALLIC SHIPPING AND STORING VESSELS, subclass 124, Tank-closures.

175. **PORTS, STOPPERS, GUN-PORT.** Port-stoppers specially adapted for ports through which the gun is pointed, the stoppers fitting the muzzle of the gun or forming a shield or protector.

Search Classes—

114—SHIPS, subclass 238, Torpedo-launching.

89—ORDNANCE, subclass 5, Submarine, for stoppers for submarine ordnance.

89—ORDNANCE, subclass 36, Shields, for protectors that close the port, but are structurally a part of the gun-mount.

176. **PORTS, STOPPERS, HINGED.** Port-stoppers in which the cover or stopper is hinged or pivoted in or to the port.

Search Classes—

114—SHIPS, subclass 175, Ports, Stoppers, Gun-port, for hinged gun-port stoppers and shields.

114—SHIPS, subclass 178, Ports, Light and air, Hinged covers, for hinged covers for light and air ports.

177. **PORTS, LIGHT AND AIR.** Ports, usually of circular shape, designed to secure light and air, and smaller than cargo or gun ports.

178. **PORTS, LIGHT AND AIR, HINGED COVERS.** Light and air ports provided with hinged, pivoted, or swinging covers for closing the same, usually forming air and water tight joints when closed.

CLASS 114—Continued.

179. **HAWSE-PIPES.** Devices involving openings or passages in a vessel's bow or stern or sides to permit cables or hawsers to run through.
180. **HAWSE-PIPES, STOPPERS AND COVERS.** Hawse-pipes having means of closure.
181. **HAWSE-PIPES, FRICTION-ROLLERS.** Hawse-holes having friction rollers or pulleys to facilitate the running out or heaving in of the cable.
182. **SCUPPERS.** Devices involving passages or holes from the decks through the ship's side to permit water accumulating on the decks to run out.
183. **BILGE-DISCHARGE.** Devices for expelling bilge-water, ash, or refuse from a ship's bilge or hold, including ejectors or other devices operated by the movement of the vessel in the water, or specific to ship use or structure.
- Search Classes—**
 103—PUMPS, subclass 62, Elements, Operating devices, for pumps operated by weights oscillating through the rolling of the vessel.
 103—PUMPS, subclasses 62, Elements, Operating devices, and 79, Systems, for ship and bilge pumps not involving ship structure.
 103—PUMPS, subclass 69, Fluid-motive power, Water-wheel, for water-wheels attached to or towed by moving vessels and operating pumps, etc.
 185—Motors, subclasses 29, Weight, Oscillating, and 30, Weight, Oscillating, Wave type, for oscillating-weight motors which may be operated by a rolling vessel.
184. **BILGE-DISCHARGE, EJECTORS.** Devices for entraining water or ashes, etc., by the motion of the ship through the water, water being injected to entrain the former or by suction produced by shape of discharge-orifice or its position in the bottom of the vessel.
185. **BILGE-DISCHARGE, EJECTORS, SHIP'S MOTION.** Ejectors which take in water forward or acting by suction due to the shape of the discharge-orifice or its position, either type being operative only when the ship is moving through the water or when a current is flowing and the vessel is stationary.
186. **BILGE-DISCHARGE, EJECTORS, ASH.** Ejectors including hoppers or other means for dumping and expelling ashes through water or steam injection, etc.
187. **SMOKE-STACKS.** Steamboat stacks or chimneys specially adapted to use on vessels, mostly swinging or telescopic in structure and having no application elsewhere.
- Search Class—**
 110—FURNACES, subclass 184, Smoke-stacks.
188. **FURNITURE.** Furniture and furnishings of ships not classifiable elsewhere because of special fitness to use on ships.
189. **FURNITURE, CABINS AND STATE-ROOMS.** Devices or arrangements of cabins and state-rooms to secure light, ventilation, comfort, and economy of space and usually separate structures rather than permanent structures in ship-building.
- Search Class—**
 114—SHIPS, subclass 71, Building, Cabins, for permanent structures in shipbuilding.
190. **FURNITURE, LIFE-PRESERVER RACKS.** Devices for holding or supporting life-preservers on vessels and specific thereto.
191. **FURNITURE, SELF-LEVELING.** Furniture that is specific to use on ships, automatic in operation, maintaining a level surface during rolling and tossing of the vessel.
192. **FURNITURE, SELF-LEVELING, BERTHS.** Berths providing for single or double swing, etc., during the rolling and pitching of the vessel, maintaining a level surface, and devices to steady berths during the rise and fall of the vessel.
193. **FURNITURE, SELF-LEVELING, BERTHS, SINGLE-PIVOT.** Berths suspended from a universal joint or single pivot, providing for berth equilibrium during the motions of the vessel.
194. **FURNITURE, SELF-LEVELING, CHAIRS.** Chairs automatically maintaining a level seat or rest during motions of the vessel in the water.
195. **FURNITURE, SELF-LEVELING, TABLES.** Tables having automatic leveling tops or equivalent devices securing the same end.
196. **VALVES.** Valves specific to use on ships and structurally united thereto.
197. **VALVES, BOAT-PLUGS.** Plugs having valves therein adapted to fit in the bottom of a boat and permit the emergence of water.
198. **VALVES, SEA-COCKS.** Devices permitting the entrance of sea-water from outside to the hold, magazine, etc., or for submerging the ship and usually placed in the bottom or between double bottoms and structurally united therewith.

CLASS 114—Continued.

199. **CABLE-STOPPERS.** Devices of the nature of compressors or controllers which have means to check or stop the cable from running out and to hold it securely at any point. *Cable* is used generically and includes hawsers, tow-lines, ropes, etc. These devices are controllable at will.
- Search Class—**
 57—HOISTING, subclass 34, Block and tackle, for analogous devices, or rope-clamps combined with hoisting apparatus.
200. **CABLE-STOPPERS, CHAIN.** Cable-stoppers structurally adapted for use on chain cables and not upon rope or wire.
201. **HATCHES AND COVERS.** Inventions in deck-hatches involving structure of hatches or deck-openings and covers thereto and devices for fastening or locking said covers down.
- Search Class—**
 39—FENCES, subclass 96, Gates, Openers, Hatch.
202. **HATCHES AND COVERS, SLIDING.** Sliding covers and gratings involving more than sliding doors.
- Search Class—**
 20—WOODEN BUILDINGS, subclasses 19, Doors, Sliding, Miscellaneous, and 20, Doors, Sliding, Jointed, for sliding doors of general application.
203. **HATCHES AND COVERS, FASTENERS.** Devices for battening, securing, and locking hatch-covers in place.
204. **TRAVELERS.** Devices having means to permit the reciprocation of a slide or ring to which the sheet of fore-and-aft sails is secured, such devices being fastened to the deck or rail.
- Search Class—**
 114—SHIPS, subclass 112, Sails and rigging, Mast-travelers, for travelers permitting vertical motion on masts and longitudinal motion on yards, etc.
205. **TRAVELERS, TENSION-RELIEVERS.** Travelers having one or more tension or surge relievers as an element of construction.
- Search Class—**
 114—SHIPS, subclass 213, Tension-relievers.
206. **ANCHORS.** Devices for anchoring a vessel.
- Search Classes—**
 37—EXCAVATING, subclass 18, Dredgers, Anchoring, for projecting piles for anchoring dredges.
 189—METALLIC BUILDING STRUCTURES, subclass 90, Land-anchors.
207. **ANCHORS, FLUKE.** Anchors having flukes or holding-surfaces to hook or scoop into the bottom, usually some form of hook and with or without palms or blades.
208. **ANCHORS, FLUKE, PIVOTED.** Fluke-anchors in which one or more of the flukes are pivotally secured to the shank, so that the fluke may be folded up or rotated.
209. **ANCHORS, DRAGS OR SEA-ANCHORS.** Devices designed to prevent motion of a vessel through the water where anchorage is unattainable, usually a device to be thrown overboard secured by a cable or hawser.
- Search Class—**
 114—SHIPS, subclass 168, Steering, Rudders, Jury.
210. **ANCHOR-TRIPPERS.** Devices for instantaneously releasing anchors, shank-painters, ring or cat stoppers, anchor-supporters, shoes, and fluke-holders, and devices for catting and fishing anchors.
- Search Classes**
 9—BOATS AND BUOYS, subclass 22, Hoisting and lowering.
 21—CARRIAGES AND WAGONS, subclass 75, Horse-detachers.
 64—HARNESSES, subclass 69, Attaching and detaching devices.
 57—HOISTING, subclass 128, Hoisting-hooks, Releasing.
 119—ANIMAL HUSBANDRY, subclass 110, Restraining devices, Hitching, Releasers.
211. **VENTILATION.** Ventilating devices specific to ships and involving the structure of the ship.
- Search Class—**
 98—PNEUMATICS, subclasses under Chimney-cowls and under Ventilation, for ventilation in general.
212. **VENTILATION, VALVES.** Ventilating devices in which cowls or hoods are provided with valves, dampers, or baffle-plates to prevent the ingress of water.
213. **TENSION-RELIEVERS.** Devices specific to ships having yielding parts to prevent tension or strains from rupturing some element of the combination and applied to cables, cable-stoppers, sheets, secured ends or "standing" parts, ropes, etc. The yielding means is usually rubber, spring, or fluid, which is compressed or stretched, as the case may be.
- Search Classes—**
 74—MACHINE ELEMENTS, subclass 72, Elastic tension devices, and the subclasses thereunder, for tension relievers not specific to ships.
 115—MARINE PROPULSION, subclass 10, Towing-machines.
214. **TENSION-RELIEVERS, FLUID.** Tension or surge relievers in which the yielding means is hydraulic or pneumatic.
- Search Class—**
 114—SHIPS, subclass 171, Steering mechanism, Rudders, Brakes, Hydraulic.
215. **TENSION-RELIEVERS, CABLE.** Tension-relievers to take up the strain on the cable and prevent parting of the cable. The yielding means generally forms an element of the cable stopper or compressor. This subclass includes tension-relievers for chain-stoppers as well as cable-stoppers.

CLASS 114—Continued.

216. **TENSION-RELIEVERS, COUPLERS.** Elastic couplings specific to use on ships and in rigging.
Search Classes—
 24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 268, Resilient connections.
 54—HARNESSES, subclass 86, Elastic.
217. **TENSION-RELIEVERS, COUPLERS, SAFETY-RELEASE.** Tension-relievers of the coupling type having a safety-release by means of which the coupled part is released when the tension reaches a certain limit.
218. **BITTS, CLEATS, AND PIN-RAILS.** Devices for belaying and securing ropes, cables, hawsers, cleats being stationary and formed with projecting horns, with or without safety releasing means; also includes rotary piles or spiles, rails for belaying-pins, and their attachments.
Search Classes—
 114—SHIPS, subclass 217, Tension-relievers, Couplers, Safety-release.
 24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 115, Cord and rope holders.
219. **FENDERS.** Devices to prevent injury to ships' hulls, their bows, and sides from collision, grounding, or waves, the wave-fenders acting as a screen or protector.
220. **FENDERS, ROLLER.** Fenders provided or formed with a freely rotating friction-roller.
221. **IMPLEMENTS.** Devices of miscellaneous character adaptable and specific to use on board ships and boats, usually separate and independent of the structure of the ship.
222. **IMPLEMENTS, HULL-CLEANING.** Devices of various types especially adapted to cleaning, painting, or scraping a ship's hull or preventing the growth and deposit of foreign matter thereon, as barnacles, or means for preventing barnacle growth.
Search Class—
 114—SHIPS, subclass 232, Oil-distributors.
223. **IMPLEMENTS, RIGGING.** Miscellaneous devices specific to use in or about ships' rigging, but not in permanent use, including rope stoppers, grips, tighteners, and other rope-handling devices.
224. **IMPLEMENTS, CALKING, PAYING, ETC.** Devices for calking or making the seams water-tight and painting, pitching, or putting the same.
 Note.—Where such results are secured by the manner or means of uniting sheaths, strakes, plates, or planking, see in this class, subclass 86, Building, Calking and seaming, the devices of this subclass being implements or machines entirely separate therefrom.
Search Class—
 18—PLASTICS, subclass 3.5, Putting devices.
225. **IMPLEMENTS, SPIKES, PINS, AND FIDS.** Wedge-shaped devices for working rope or securing and locking mast or spar joints, etc.
226. **IMPLEMENTS, CLAMPS.** Devices for securing and holding ropes and hawsers to facilitate splicing, turning in dead-eyes, hauling, etc., and hawser-tongs.
Search Classes—
 24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 115, Cord and rope holders.
 57—HOISTING, subclass 34, Block and tackle, for rope-clamps combined with hoisting-tackle or pulley-blocks.
227. **LEAK-STOPPERS.** Devices for stopping leaks of vessels applied from the inside or from the exterior of the vessel, but not of the nature of linings and fillings between bottoms, planks, or plates.
Search Class—
 114—SHIPS, subclass 69, Building, Insubmersible vessels, Linings, and fillings, for linings and fillings between bottoms, planks, or plates.
228. **LEAK-STOPPERS, INTERIOR.** Stoppers applied to the inside of the hull.
229. **LEAK-STOPPERS, APRONS, MATS, ETC.** Means applied externally to prevent leaking in which the stopper is of the nature of an apron, mat, mattress, curtain, etc., and applied over the leak.

CLASS 114—Continued.

230. **MOORING DEVICES.** Devices for securing a vessel to a buoy-float, dock, or slip, the securing or releasing means being usually automatic in the latter case.
231. **MOORING DEVICES, FERRY-SLIP.** Moorings in which a part of the securing means is located upon the vessel and usually operated automatically as the boat comes in.
Search Class—
 14—BRIDGES, subclass 2, Gangways and ferry guards.
232. **OIL-DISTRIBUTERS.** Miscellaneous devices for spreading oil upon the surface of the waves or hulls of the vessels, primarily to diminish the roughness and force of the waves in storms; includes devices that distribute oil to the contact-surface of the hulls of vessels to diminish the water friction and increase the speed and prevent attachment and growth of barnacles, etc., thus cleaning the hull.
Search Classes—
 9—BOATS AND BUOYS, subclass 8.5, Buoys, Oil-distributors.
 61—HYDRAULIC ENGINEERING, subclass 54, Harbors, Fortifications and defenses, for oil-distributors used in harbors.
 102—AMMUNITION AND EXPLOSIVE DEVICES, subclass 35, Projectiles, oil-distributing.
233. **OIL-DISTRIBUTERS, SHIP STRUCTURE.** Devices fixed to or involving the ship or its structure, usually distributing oil through pipes to orifices in or about the hull.
Search Class—
 114—SHIPS, subclass 67, Building, Antifriction-surfaces, for air and oil distributors of similar structure used for diminishing friction.
234. **OIL-DISTRIBUTERS, DRAGS AND FLOATS.** Oil-receptacles thrown overboard from vessels to gradually spread oil on the surface of the sea secured to the vessel by a tow-line or hawser and dragged or floated on the surface of the sea.
Search Class—
 61—HYDRAULIC ENGINEERING, subclass 54, Harbors, Fortifications and defenses, for devices for distributing oil in harbors.
235. **TOWING.** Devices specific to boat and ship tows, including arrangements of boats in train, lashing and securing means, tow-couplings and lines, and attachments.
Search Class—
 115—MARINE PROPULSION, subclass 6, Towing, and the subclasses thereunder, for all towing devices involving means for marine propulsion.
236. **TOWING, STEERING MECHANISM.** Devices applicable only to use in towing and to boats in train for changing the direction of the tow or operating the rudder of any of them.
237. **TOWING, STEERING MECHANISM, INDICATORS.** Indicators or devices for locating the position of the tow when the vessel may not be discernible and not otherwise classifiable because of the specific use to which it is applied and the combination of elements of which it is one.
Search Class—
 177—ELECTRIC SIGNALING, subclass 324, Annunciators, and the subclasses thereunder, for electrically-operated devices.
238. **TORPEDO-LAUNCHING.** Devices for launching, releasing, handling, or expelling torpedoes of the fish or automobile type. In the torpedo-tubes included herein the expelling power of air, gas, liquid, or gunpowder is only sufficient to make the torpedo take the water.
Search Class—
 89—ORDNANCE, subclass 5, Submarine, for torpedo-guns for torpedo-projectiles that are projected rather than launched.
239. **TORPEDO-LAUNCHING, OUTBOARD.** Devices pivoted, suspended, or secured to the ship's side or deck for expelling, handling, or launching torpedoes, including tubes mounted upon boats' decks, but not torpedo-tubes of the inboard type.
Search Class—
 114—SHIPS, subclass 19, Torpedo-boats, Spar, for torpedoes carried at the end of the spar.
240. **TORPEDO-GUARDS.** Devices applied externally to a ship or supported thereon to prevent torpedoes from touching the vessel's hull.
241. **TORPEDO-GUARDS, NETS.** Net-like torpedo guards.

CLASS 115.—MARINE PROPULSION.

DEFINITIONS.

Class.

This class includes and is limited to inventions that relate to and have for their object means other than oars or sails for moving vessels through the water. It includes all types of propellers acting or reacting upon the water and all inventions for moving tows not otherwise classified.

Inventions pertaining to the structure or details of ships or boats are classified in classes 114, SHIPS, and 9, BOATS AND BUOYS.

Subclasses.

0.5. MISCELLANEOUS. Such propelling devices as are not otherwise classifiable.

1. LAND AND WATER BOATS. Inventions relating specifically to propelling means and designed for use upon either land or water.

Note.—Ice-boats adapted to be used in water and usually provided with rammers, with or without ice propelling means, are classified in class 114, SHIPS.

2. LAND AND WATER BOATS, PEDOMOTORS. Land and water boat-propellers driven by the feet.

3. WIND-MOTORS. Motors actuated by the wind and which operate propellers of any type.

4. WAVE PROPULSION. Devices actuated by the motion of the vessel or by wave-motors that drive the propellers or the vessel.

Note.—Wave-motors *per se* are classified in class 61, HYDRAULIC ENGINEERING, subclasses of Tide-powers, and in class 138, HYDRAULIC MOTORS.

5. WAVE PROPULSION, OSCILLATING WEIGHT. Marine propelling devices operated through the oscillation of a weight actuated by the rolling or other motion of the vessel, the motion being caused by waves.

Search Class—

185—MOTORS, subclasses 29, Weight, Oscillating, and 30, Weight, Oscillating, Wave type.

6. TOWING. Inventions in means for propelling or towing vessels in canals and rivers or upon the sea or other body of water, other than those involving the construction of electrical railway motors and systems.

Search Classes—

114—SHIPS, subclass 235, Towing, and the subclasses thereunder, for towing devices other than propelling means.

191—ELECTRICITY, ELECTRIC RAILWAYS, subclass 22, Telpher and towing, for electric-railway systems.

7. TOWING, CABLE SYSTEMS. Propelling means involving the use of a cable, which may be either fixed or movable. If movable, the vessel is provided with means for securing the cable thereto, and if fixed the vessel has traction means for hauling the cable in and paying it out; also ferrying devices comprising fixed cables and vessels operated by rudders, fins, or other current devices and motors for propelling across the stream.

Search Class—

191—ELECTRICITY, ELECTRIC RAILWAYS, subclass 22, Telpher and towing, when electrical devices are involved and the cable is an electric trolley.

8. TOWING, TRACK SYSTEMS. Propelling means used in towing in which tracks are used upon which the traction device or vessel runs, it being immaterial whether the track is horizontal, vertical, or in the bed of a canal.

9. TOWING, GROUND-WHEELS OR POLERS. Propelling means in which traction-wheels are used to take on the bed or bottom of the canal or in which the vessel is pushed by polers or poles.

10. TOWING, TOWING-MACHINES. Devices for hauling in or paying out the cable or tow-line upon sudden strain caused by force of the waves. These devices are of the nature of tension or surge relieves and are chiefly used to preserve the relation between the towing vessel and the tow.

11. JET. Propelling devices in which a jet of fluid is used for propelling a vessel which by reaction upon the water in which the vessel is floated causes its motion.

12. JET, STEERING. Jet-propellers that involve means for steering combined with the propelling means.

Search Class—

114—SHIPS, subclass 151, Steering mechanism, Fluid-pressure, Jet, for jet-steering alone or for the purpose of steering only.

13. JET, EXPLOSIVE. Propelling devices causing explosive jets of the nature of those used in air and gas engines used for propelling a vessel and usually specific thereto or involving the structure of the vessel.

CLASS 115—Continued.

Search Class—

160—STEAM AND VACUUM PUMPS, for explosive devices *per se* for elevating or propelling water.

14. JET, HYDRAULIC. Jet-propelling devices in which a column or jet of water is ejected by any means, the vessel being propelled by the reaction due to the impact of the jet.

15. JET, HYDRAULIC, PNEUMATIC-DRIVE. Hydraulic-jet devices in which the jet is set in motion in a water-channel by means of the force exerted thereon by an aeriform body, usually air or steam.

Note.—Explosive jets, whether acting directly upon the external water or upon a channel in which water is combined, are classified in this class, subclass 13, Jet, Explosive.

16. JET, HYDRAULIC, WHEEL-DRIVE. Hydraulic jets actuated by paddle or water wheels, screws, or centrifugal pumps which are located somewhere in a water channel or way between the intake and emerging orifices.

Note.—These devices differ from paddle-wheels or screws in channels or ways (see subclasses 39 and 53 in this class) in that in these the channel is closed, not open to the water laterally, and in that the vessel is propelled by the reaction caused by the impact of the jet upon the external water, while in the wheels and screws in channels and ways the reaction is principally upon the wheel or screw.

17. PORTABLE PROPELLERS. Propelling devices of any type adaptable to any boat or vessel and not permanently secured thereto, usually provided with clamping means by which they may be secured to the gunwale, stern, or sides or that are easily removable or attached.

18. PORTABLE PROPELLERS, STEERING. Portable propellers that steer as well as propel, when desired.

19. BUOYANT PROPELLERS. Types of propelling devices which are distinctly buoyant in structure and action and help to buoy up or float the vessel.

20. BUOYANT PROPELLERS, ROTARY HULL. Buoyant propellers in which the hull or outer shell revolves in propelling, either rolling upon or over or, screw-like, revolving through the water, the machinery, cabins, etc., being within the rotary shell.

21. MANUAL POWER. Propellers driven by hand-power and not otherwise classifiable, the invention relating principally to the hand-motor for driving the propeller or including it.

Search Class—

115—MARINE PROPULSION, subclass 66, Crank-paddles.

22. MANUAL POWER, CATAMARAN. Manually-propelled boats or vessels in which a plurality of hulls or floats are structurally united, usually to form a channel-way in or adjacent to which the propeller is hung or fitted.

23. MANUAL POWER, PADDLE-WHEEL. Paddle-wheels operated by hand-power.

24. MANUAL POWER, SCREW. Manually-propelled screw-propellers.

25. MARINE PEDOMOTORS. Marine velocipedes propelled by foot-power.

26. MARINE PEDOMOTORS, CATAMARAN. Foot-propelled velocipedes of the multiple hull or float type.

27. MARINE PEDOMOTORS, BICYCLE-PROPELLED. Foot-power velocipedes, an ordinary bicycle being the actuating device.

28. OSCILLATING PROPELLERS. Propellers which propel the vessel by their oscillations, the blades of said propellers usually feathering or offering but little resistance to the water on the return stroke.

Note.—These propellers differ from "reciprocating propellers" (31) in that the propeller does not move back and forth in a straight line, and they differ from "crank-paddles" (66) in that the latter dip into the water and are wholly or partially retracted. The resistance of the water on the back stroke of oscillating propellers is overcome by feathering.

29. OSCILLATING PROPELLERS, STEERING. Propellers of this type that are adaptable for steering and propulsion.

30. OSCILLATING PROPELLERS, REVERSING. Oscillating propellers having means for reversing, so that they may be used for propelling "ahead" or "back," usually by causing the blades to feather in the opposite direction or on the other side.

31. RECIPROCATING PROPELLERS. Propellers of this type operate back and forth in a straight line, the resistance of the water being overcome on the back stroke by feathering or equivalent.

CLASS 115—Continued.

32. RECIPROCATING PROPELLERS, STEERING. Reciprocating propellers that are used for steering as well as for propelling.
33. RECIPROCATING PROPELLERS, REVERSING. Reciprocating propellers having means for reversing by which they are used for going ahead or backing, usually by changing the direction of feathering or equivalent.
34. SCREW-PROPELLERS. Types of screw-propellers not otherwise classifiable below and involving their form and construction.
Search Classes—
 193—CONVEYERS, subclass 13, Screw.
 244—AERONAUTICS, subclass 26, Propellers, Screw.
35. SCREW-PROPELLERS, STEERING. Types of screw-propellers combined with means by which they may be and are used for steering.
36. SCREW-PROPELLERS, FITTING AND DRIVING. Means and methods of driving the propeller, the arrangement, hanging connections or fittings, or all other combinations that involve more than the structure of the propeller *per se*.
Search Class—
 115—MARINE PROPULSION, subclasses 21, Manual power; 22, Manual power, Catamaran, and 24, Manual power, Screw, for manually-propelled screws; subclass 25, Marine pedomotors, and the subclasses thereunder, for foot-propelled velopedes.
37. SCREW-PROPELLERS, FITTING AND DRIVING, MULTIPLE OR TWIN SCREW. Inventions relating to the use of more than one propeller.
Search Class—
 114—SHIPS, subclass 57, Form, Screw-propeller type.
38. SCREW-PROPELLERS, FITTING AND DRIVING, MULTIPLE OR TWIN SCREW, SIDE. Those screw-propellers in which a plurality of screws is used amidships, or nearly so, at the sides of the vessel.
39. SCREW-PROPELLERS, FITTING AND DRIVING, CHANNELS AND WAYS. Inventions in fitting and driving in which the vessel is formed so as to provide a water channel or way to force the water toward and from the screw. These channels are more or less open.
 Note.—For channels formed through the vessel within which a screw revolves to form an emerging jet see this class, subclass 16, Jet, Hydraulic, Wheel-drive.
 Note.—Where the channel is formed by a short cylinder or casing around the screw, see this class, subclass 42, Screw-propellers, Fitting and driving, Casings and shields.
Search Class—
 114—SHIPS, subclass 57, Form, Screw-propeller type.
40. SCREW-PROPELLERS, FITTING AND DRIVING, SELF-CLEARING. Propellers having means for cutting themselves free from weeds or other marine vegetation.
41. SCREW-PROPELLERS, FITTING AND DRIVING, DEPTH REGULATION. Means for adjusting the screw-propeller vertically.
42. SCREW-PROPELLERS, FITTING AND DRIVING, CASINGS AND SHIELDS. Screw-propellers fitted with incasing hoods, cylinders, or other casings not revoluble or structurally integral with the screw. This group also includes grates, screens, or other fenders or shields designed to protect the screw and its blades.
 Note.—Where the casing is structurally united with the blades or screw and revolves with it, see this class, subclass 48, Screw-propellers, Radial blades, Rims or cylinders.
43. SCREW-PROPELLERS, FITTING AND DRIVING, PROPELLER-SHAFT BRAKES. Inventions in brakes applied to and acting upon the propeller-shaft to prevent the "racing" of the propeller and usually automatic in operation.
 Note.—Propeller-shaft brakes that involve means for throttling the steam by a marine governor are classified in class 121, STEAM-ENGINES, subclass 113, Speed-governors, Marine.
44. SCREW-PROPELLERS, ADJUSTABLE BLADES. Screw-propellers in which the blades are adjustable in any way, usually by devices for changing the pitch.
45. SCREW-PROPELLERS, ADJUSTABLE BLADES, REVERSING. Screw-propellers having adjustable blades, with means for reversing the pitch of the blades, changing from a right to left handed screw or equivalent.
46. SCREW-PROPELLERS, RADIAL BLADES. Screw-propellers in which the blades emerge from the hub as spokes from a wheel or in which the blade neither extends more than half-way around the circumference of the hub nor forms a so-called "continuous screw" around the hub or cylinder on which it is formed. This group is further limited to propellers *per se*, not involving driving or fitting means.
Search Class—
 115—MARINE PROPULSION, subclass 42, Screw-propellers, Fitting and driving, Casings and shields.
47. SCREW-PROPELLERS, RADIAL BLADES, REMOVABLE. Radial-blade propellers in which the blades are separable or provided with means for removable attachment to the hub, so that the blades may be replaced or taken off for repairs.

CLASS 115—Continued.

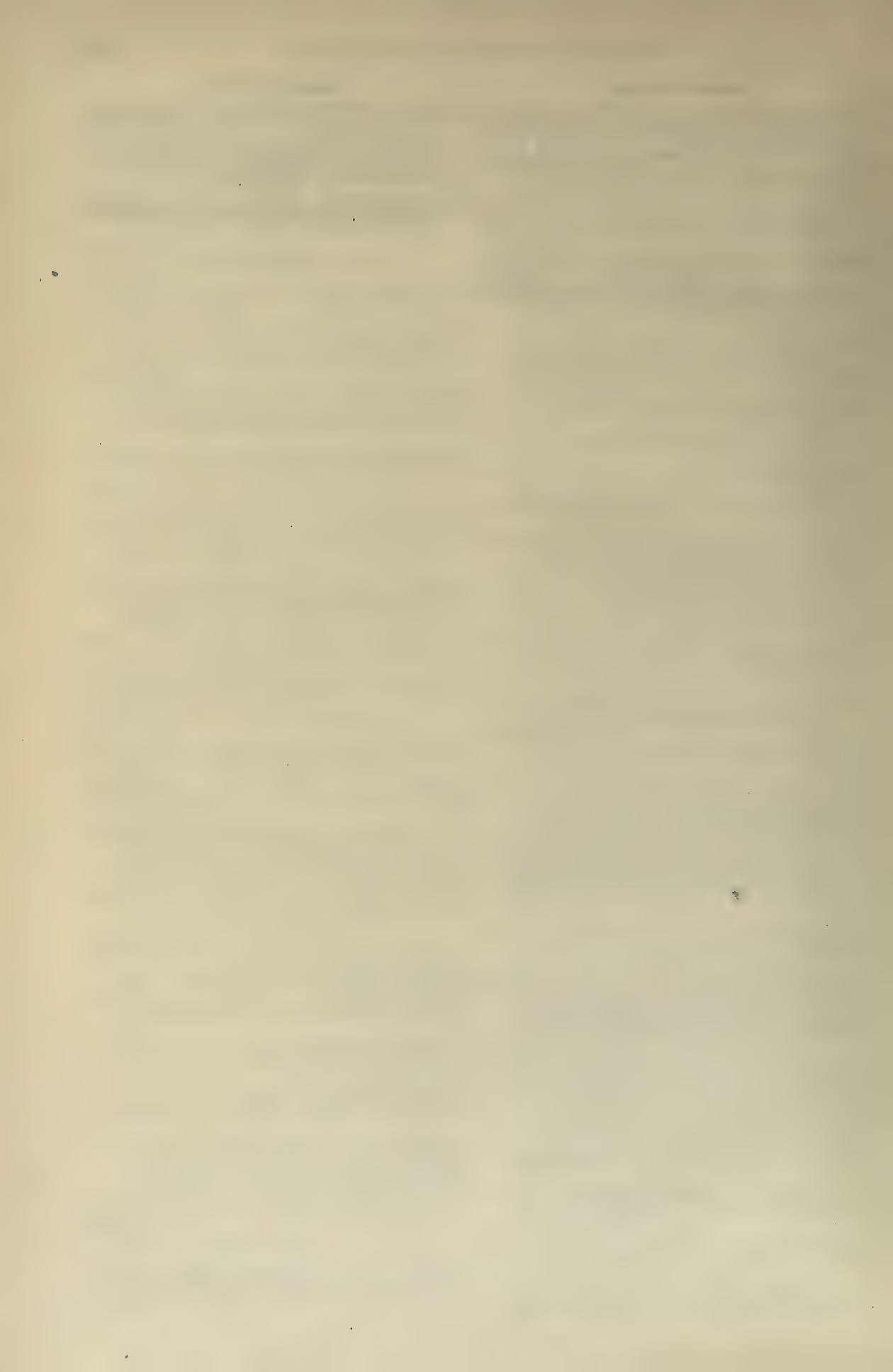
48. SCREW-PROPELLERS, RADIAL BLADES, RIMS OR CYLINDERS. Radial-blade propellers that are surrounded by a rim or cylinder, said rim, cylinder, or equivalent being revoluble with the screw and structurally united thereto or in which the peripheral extremities of the blades are united to form such rim or cylinder.
 Note.—For similar devices that are not revoluble with the screw see this class, subclass 42, Screw-propellers, Fitting and driving, Casings and shields.
49. PADDLE-WHEELS. Miscellaneous paddle or water wheels not otherwise classifiable used for propelling vessels.
Search Class—
 115—MARINE PROPULSION, subclass 23, Manual power, Paddle-wheel.
50. PADDLE-WHEELS, STEERING. Paddle-wheels arranged to effect steering as well as propulsion or provided with means by which they may be used for steering also.
51. PADDLE-WHEELS, FITTING AND DRIVING. Inventions relating to the fitting of paddle-wheels or to driving means involving more than the paddle-wheel *per se*.
 Note.—For devices that are as applicable to screw propulsion as to paddle-wheels see in this class, subclass 36, Screw-propellers, Fitting and driving.
 Note.—For manually-actuated motors see in this class, subclasses 22, Manual power, Catamaran, and 23, Manual power, Paddle-wheel.
 Note.—For foot-propelled wheels see in this class, subclass 25, Marine pedomotors, and the subclasses thereunder.
52. PADDLE-WHEELS, FITTING AND DRIVING, HORIZONTAL AND INCLINED WHEELS. Paddle-wheels having other than a horizontal axis.
 Note.—Many wheels of this type are classified in this class, subclass 50, Paddle-wheels, Steering.
53. PADDLE-WHEELS, FITTING AND DRIVING, CHANNELS AND WAYS. Inventions in which the water or paddle wheel is placed in a waterway formed in the vessel that is open at the bottom or sides or that is formed between the parts of a divided hull or between hulls.
 Note.—For devices in which the water-wheel is placed in a channel open only at the ends in which the wheel sets a jet in motion, the reaction of which propels the vessel, see in this class, subclass 16, Jet, Hydraulic, Wheel-drive.
 Note.—For similar channels and ways in which screw-propellers are used search in this class, subclass 41, Screw-propellers, Fitting and driving, Depth regulation, or in subclass 42, Screw-propellers, Fitting and driving, Casings and shields.
54. PADDLE-WHEELS, FITTING AND DRIVING, DEPTH REGULATION. Inventions relating to means for the vertical adjustment or submergence of the paddle-wheel.
Search Class—
 115—MARINE PROPULSION, subclass 41, Screw-propellers, Fitting and driving, Depth regulation, for similar devices for screw-propellers.
55. PADDLE-WHEELS, FEATHERING BLADES. Paddle-wheels having means for turning the blades or buckets so as to offer less or no resistance to their passage through the water when they have passed through the effective portion of their rotation. The blades are made to feather about a radial axis or about a line parallel to the axis of the wheel.
Search Classes—
 103—PUMPS, subclass 69, Fluid-motive power, Water-wheel.
 138—HYDRAULIC MOTORS, subclass 12, Rotary, Feathering.
 170—WIND-WHEELS, subclasses 1, Wind-wheels, Horizontal, and 2, Wind-wheels, Oscillating.
56. PADDLE-WHEELS, FEATHERING BLADES, ADJUSTABLE. Inventions in feathering paddle-wheels in which the amount of feathering is adjustable or can be effected at different points in the rotation of the wheel.
57. PADDLE-WHEELS, FEATHERING BLADES, RADIAL AXIS. Feathering means in which the blade is turned or feathered about an axis coincident or parallel with the radius of the wheel in distinction from that in which the feathering is about an axis parallel with that of the axis of the wheel or in which the blades are moved in and out radially.
58. PADDLE-WHEELS, FEATHERING BLADES, GUIDES, TRACKS, ETC. Devices for causing the paddle-blade, bucket, or float to turn on its horizontal axis or move in and out by means of a cam or by guides, tracks, etc., over or through which a part connected to the blade or bucket travels.
59. PADDLE-WHEELS, FEATHERING BLADES, GEARING. Devices in which feathering is effected by means of intermediate gearing between the blades or buckets and the hub or wheel.
60. PADDLE-WHEELS, FEATHERING BLADES, ECCENTRICS. Devices in which the blades or buckets, etc., of the paddle-wheel are feathered by means of connections to an eccentric on the axis of the wheel.
61. PADDLE-WHEELS, ADJUSTABLE BLADES OR BUCKETS. Paddle-wheels in which the blades, buckets, or floats of the wheel are made adjustable thereon.
62. PADDLE-WHEELS, CURVILINEAR BLADES OR BUCKETS. Inventions relating to the curvilinear form, shape, or to the periphery of the blades, buckets, floats, etc.

CLASS 115—Continued.

63. CHAIN-PROPELLERS. In the propellers of this type the blades, buckets, or floats that act on the water are secured to an endless chain or web, the movement of which moves the blades that propel the boat.
- Note.—For similar devices actuated by a current or tide-water which if their action were reversed could be used as propellers, see class 138, HYDRAULIC MOTORS, subclass 11, Chain.
64. CHAIN-PROPELLERS, STEERING AND ADJUSTABLE. Chain-propellers that are constructed and used for steering as well as propulsion; also chain-propellers that are adjustable as a whole or in part in any way.
65. CHAIN-PROPELLERS, FEATHERING. Chain-propellers that have means for making the blades take a position in which they offer but little or no resistance to the water or air through which they pass in moving on the back stroke or when not in position for propelling.

CLASS 115—Continued.

66. CRANK-PADDLES. Propellers operated by a crank or equivalent, the propeller-blades, usually in the form of a paddle, being dipped thereby into the water during the effective portion of their stroke and wholly or partially retracted during the remainder or on the back stroke, thereby presenting less surface to the water. Their operation is similar to that of a canoe-paddle made to move mechanically.
67. CRANK-PADDLES, STEERING AND ADJUSTABLE. Crank-paddles that are used for steering and propulsion and crank-paddles that are adjustable in any way.



CLASS 119.—ANIMAL HUSBANDRY.**DEFINITIONS.***Class.*

The broad or group class of inventions applicable to the propagation, rearing, training, and care of living animals. The word "animal" is used in its generic biological meaning of a living sentient organism and is applicable to insects, fish, fowl, mammals, and other forms of animal life.

The class is subdivided into (1) a special culture group, wherein are classified those inventions the common bond between which is determined by the particular kind of organism which they are designed to treat, and (2) a number of groups the common bond between which is determined by the function or mode of operation of the inventions rather than the particular creature to which they are applied. In the latter group are also placed special apparatus limited in use to the care and culture of fowls, which are placed in subclasses having a distinctive title.

Search Classes—

6—BEE CULTURE, for the propagation and care of bees.

17—BUTCHERING, for slaughtering apparatus.

43—FISHING AND TRAPPING, for apparatus for capturing wild animals.

54—HARNESS, for work and training harness for animals.

101—PRINTING, for printing, branding, and tattooing instruments.

128—SURGERY, subclasses under "Veterinary" for animal surgical appliances, including castrating, dehorning, tagging, snout-cutting, and ring and clip applying instruments and those for cutting identification marks or otherwise operating upon the flesh.

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 14, Self-heating tools, Branding irons, and the subclasses thereunder, for branding tools of general application, some of which are adapted to brand domestic animals, and in subclass 17, Self-heating tools, Burning tools, and the subclasses thereunder, for cauterizing tools, among which are devices for sterilizing wounds of animals.

Subclasses.

1. MISCELLANEOUS. Inventions not otherwise classified having to do with animal husbandry.
2. SPECIAL CULTURE, AQUATIC, CRUSTACEAN. Inventions relating to the care and propagation of lobsters, crabs, and like aquatic crustaceans.
3. SPECIAL CULTURE, AQUATIC, FISH. Inventions specifically adapted to the care and propagation of fish.
4. SPECIAL CULTURE, AQUATIC, MOLLUSK. Inventions specifically adapted to the propagation and care of oysters, clams, and other aquatic mollusks.
5. SPECIAL CULTURE, AQUATIC, AQUARIUMS. Special forms of water receptacles and appliances coöperating therewith adapted to the care or exhibition of fishes and other aquatic animals. Excludes all devices particularly adapted for use in propagation.
6. SPECIAL CULTURE, SILKWORM. Inventions employed in propagating and caring for the "worm" and other forms of those moths whose larvæ produce silk.

Search Classes—

20—WOODEN BUILDINGS, appropriate subclasses, and 189, METALLIC BUILDING STRUCTURES, appropriate subclasses, for elements of stock car structure, such as doors, floors, etc.

105—RAILWAY ROLLING-STOCK, subclass 15, Cars, Freight, and appropriate subclasses, for general freight car structure.

8. STOCK CARS, CONVERTIBLE. Stock cars provided with means whereby they may be converted into an ordinary closed freight or "box" car for the transportation of grain, etc., or for the protection of valuable animals against inclement weather.

Search Class—

105—RAILWAY ROLLING-STOCK, subclass 193, Cars, Freight, Removable side sections.

9. STOCK CARS, DECKS. Stock cars which in addition to devices designed to facilitate the care of animals are provided with intermediate floors for the accommodation of small stock.

Search Class—

105—RAILWAY ROLLING-STOCK, subclass 199, Cars, Passenger, Double-deck, for cars with permanent double-decks specifically adapted to carry human beings, and appropriate subclasses under Cars, for car decks of general application.

10. STOCK CARS, FEEDING AND WATERING DEVICES. Racks, troughs, drinking fountains, water supply systems, and food storage systems specially constructed for use in a stock car, and particularly the arrangement and coöperation of said devices to facilitate the feeding and watering of the animals being transported.

CLASS 119—Continued.**Search Class—**

119—ANIMAL HUSBANDRY, subclasses 51, Feeding devices, appropriate subclasses, for feeding devices *per se*, and 74, Watering devices, Fountains and troughs, appropriate subclasses, for watering devices of general application.

11. STOCK CARS, PARTITIONS. Vertical movable devices specially adapted to subdivide a stock car into stalls or pen-like compartments for the purpose of separating animals during transportation, including not only flexible, open, and solid partitions and inswinging doors performing similar functions, but mechanisms specially adapted to use in a stock car for moving said partitions.

Search Class—

119—ANIMAL HUSBANDRY, subclass 27, Confining and housing devices, Stalls, for stall-forming partitions of general application.

12. STOCK CARS, PARTITIONS, POULTRY. Stock cars so constructed interiorly as to facilitate the care for and transportation of a large number of groups of fowls.

Search Class—

105—RAILWAY ROLLING-STOCK, subclass 77, Cars, Freight, Fruit, for details.

13. STOCK CARS, SAFEGUARDS. Means for preventing animals from being injured during transportation by the swaying or jerking of the cars or from their remaining upon their feet during a long period of time, such as interior buffers, yielding partitions, supporting platforms, stocks, and slings specially designed for use in stock cars.

Search Class—

119—ANIMAL HUSBANDRY, subclasses 100, Restraining devices, Stocks, Combined slings and hoppers, and 102, Restraining devices, Stocks, Slings, and the subclasses referred to in the search notes thereof.

14. STOCK CARS, VESTIBULE. Stock cars provided with end openings and end platforms inclosed by walls forming a vestibule or protected passage way designed to connect contiguous cars and to afford a safe passage for animals.

Search Class—

105—RAILWAY ROLLING-STOCK, subclass 61, Cars, Vestibule, for vestibule structures of general application.

15. CONFINING AND HOUSING DEVICES. Inventions not otherwise classifiable specially adapted for confining animals to comparatively restricted areas for protecting them against intruders and unfavorable conditions of weather or for facilitating their care and management. Inventions in metal, wood, or masonry structures or elements or receptacles of general utility are not classified here, although used in animal housing.

16. CONFINING AND HOUSING DEVICES, BARNS AND SHEDS. Roofed building structures particularly adapted to house and protect animals and to facilitate their care.

Search Classes—

20—WOODEN BUILDINGS; 72, MASONRY AND CONCRETE STRUCTURES, and 189, METALLIC BUILDING STRUCTURES, appropriate subclasses, for the various units of building structure.

20—WOODEN BUILDINGS, subclass 2, Portable houses, and 189, METALLIC BUILDING STRUCTURES, subclass 2, Buildings, Portable, for portable buildings.

17. CONFINING AND HOUSING DEVICES, CAGES. Barred or reticulated structures designed to confine birds or other animals. Cages confine against escape in all directions. A structure need not be made entirely of openwork to fall within this subclass, but the openwork must be more than a mere door or window.

Search Classes—

189—METALLIC BUILDING STRUCTURES, subclass 5, Buildings, Jails, for analogous structures.

217—WOODEN RECEPTACLES, and 220, METALLIC SHIPPING AND STORING VESSELS, appropriate subclasses, for confining and transporting receptacles of general utility, although adapted to confine small animals.

18. CONFINING AND HOUSING DEVICES, CAGES, FOOD AND WATER HOLDERS. Food and water receptacles specially adapted to cages and in that respect distinguished from the feeding and watering devices elsewhere classified herein.

19. CONFINING AND HOUSING DEVICES, COOPS AND KENNELS. Small, easily portable, roofed, house-like structures not otherwise classifiable designed to inclose and to protect a limited number of fowls or other animals. Coops are distinguished from brooders in that they lack the essential of a chick hover.

20. CONFINING AND HOUSING DEVICES, PENS AND RACKS. Roofless inclosing means particularly adapted to confine stock or protect it from intrusion. Pens and racks are

CLASS 119—Continued.

distinguished from "animal stocks" in that the latter are specially designed to hold animals in a comparatively immovable position, while the former permit free movement within the inclosure. Includes corrals, stock yards, racks for platform scales, feeding and farrowing pens, and devices of a similar structure and function not otherwise classifiable.

Search Classes—

217—WOODEN RECEPTACLES, subclass 39, Boxes, Crates, Poultry, and 221, METALLIC SHIPPING AND STORING VESSELS, appropriate subclasses under Crates, for construction of poultry confining and shipping crates wherein the invention is of general utility in receptacles.

21. CONFINING AND HOUSING DEVICES, FOWL. Buildings (and accessories) specially designed to confine and protect poultry; differing from coops in that they are comparatively large and generally designed to accommodate a considerable number of mature fowls, and differing from barns and sheds more particularly in internal arrangement and equipment and in means of ventilation and lighting.

22. CONFINING AND HOUSING DEVICES, FOWL, APPLIANCES. Poultry house fittings and furnishings not otherwise classifiable. Includes poultry run-ways, guano catchers, etc.

23. CONFINING AND HOUSING DEVICES, FOWL, BIRD HOUSES. Small inclosures having one or more openings to admit a small bird, usually designed to be secured to a tree or some elevated support.

24. CONFINING AND HOUSING DEVICES, FOWL, PERCHES. Devices specially designed to support a roosting fowl.

25. CONFINING AND HOUSING DEVICES, FOWL, PERCHES, ANTIVERMIN. Perches constructed to receive an insecticide and perches having insect traps and guards to prevent access of vermin.

26. CONFINING AND HOUSING DEVICES, FOWL, PERCHES, BIRD. Perches particularly designed for the use of small birds and generally having special means adapting them to be secured to a cage.

27. CONFINING AND HOUSING DEVICES, STALLS. Open compartments, usually adapted to a barn, shed, or pen, of such size and shape as to afford a means for segregating, standing, and restraining quadrupeds, particularly horses and cattle, for the purpose of protecting them from interference and injury or of placing them advantageously for feeding purposes.

Search Class—

119—ANIMAL HUSBANDRY, subclass 11, Stock cars, Partitions, for devices employed to form stalls specially adapted to use in a stock car or freight boat.

28. CONFINING AND HOUSING DEVICES, STALLS, FLOORS. Limited to structures forming the bottom of a stall or pen to insure a dry, sanitary, easily cleaned, durable floor upon which confined animals may stand or lie. In this subclass are placed stable drains and gutters designed to cooperate with the floor structure to facilitate the removal of excrement.

Search Classes—

15—BRUSHING AND SCRUBBING, subclass 62, Mats, for mat-like devices employed as a stall floor.

20—WOODEN BUILDINGS, subclasses under Floors, for wooden floors of general application; subclass 78, Slatted floor covering, for slatted floor coverings *per se*.

29. BREAKING AND TRAINING DEVICES. Inventions relating to training, breaking, and exercising horses or other animals. Includes harness elements, in conjunction with sweeps, thills, chariots, movable stocks, traveling floors, or slings designed to give the trainer more complete control of the animal placed therein for training, but does not include training harness.

Search Class—

54—HARNESS, subclass 71, Breaking and training devices, for breaking and training harness.

30. BROODERS AND INCUBATORS. Devices capable of performing the functions of a brooder and incubator simultaneously, the combination involving a separate chamber for each function, both of which chambers are usually warmed from the same source of heat. The essential of the inventions in this subclass lies in the combination in one structure of an incubator and a brooder, the latter being distinguished from a chick nursery in that the brooder is especially adapted to hover and protect the chicks during their growth from exclusion to weaning time, while the nursery is usually located in the egg chamber and is merely designed to receive temporarily the newly hatched chicks pending their removal to the brooder.

Search Class—

119—ANIMAL HUSBANDRY, subclasses 31, Brooders, and the subclasses thereunder, and 35, Incubators, and the subclasses thereunder.

31. BROODERS. Miscellaneous devices not otherwise classifiable designed to provide small warmed inclosed compartments for hovering and housing chicks. They are distinguished from small coops in that the brooder is provided with a hover or hover compartment designed to perform the function of a mother fowl in providing shelter and warmth, while the coop is usually a very small house-like structure containing no hover and designed merely to house a fowl and its young brood.

CLASS 119—Continued.

Search Class—

237—HEAT-DISTRIBUTING SYSTEMS, subclass 21, Brooder and incubator, and the subclasses thereunder, for heat-distributing systems and heaters *per se* adapted to heat an incubator or a brooder.

32. BROODERS, CENTRAL HEATER. Brooders having a primary source of heat located approximately in a line vertical to the center of the hover or hover chamber.

Search Classes—

119—ANIMAL HUSBANDRY, subclasses 39, Incubators, Hot air, and 41, Incubators, Hot water, for elements in common.

237—HEAT-DISTRIBUTING SYSTEMS, appropriate subclasses under 21, Brooder and incubator, for heaters.

33. BROODERS, FIRELESS. Brooders so constructed that the temperature is maintained in the brood chamber by conserving heat from the brooded chicks or from a previous heating or by utilizing the heat resulting from organic fermentation or other heating process not due to combustion of fuel.

34. BROODERS, LATERAL HEATER. Brooders having a primary heater located at one side of the hover.

Search Class—

119—ANIMAL HUSBANDRY, subclasses 40, Incubators, Hot air, Lateral heater, and 42, Incubators, Hot water, Lateral heater.

35. INCUBATORS. Devices specially designed to hatch fowls from eggs. Includes all miscellaneous features and attachments, as well as such types of incubators as are not clearly covered by the minor subclasses hereunder, and systems, apparatus, and methods of moisture supply or ventilation exclusively applicable to incubators.

Search Classes—

119—ANIMAL HUSBANDRY, subclasses under Incubators, for systems of incubator ventilation that are so intimately related to the other factors of a complete operative incubator as to be indivisible therefrom.

98—PNEUMATICS, for the generic art of ventilation; subclass 39, Ventilation, Air moistening, cooling, and cleansing, and appropriate subclasses, for the general art of air moistening.

126—STOVES AND FURNACES, subclasses 113, Hot-air furnaces, Air-moisteners; 120, Fireplaces, and 134, Fireplaces, Air-moistening attachments, for combined heaters and air-moisteners; subclass 293, Dampers, Stovepipe, Combined damper and ventilator, for manually operated combined dampers and ventilators; subclass 80, Stoves, Heating, Ventilating attachments, and 236, DAMPERS, AUTOMATIC, for ventilation of heaters of general application, and for ventilators indivisibly related to temperature regulation and which are employed to perform the double function of regulating the temperature of the egg chamber and the amount of fresh air admitted thereto; and for thermostatic devices for regulating temperature.

36. INCUBATORS, CONTACT. Inventions in which heat is conveyed to the eggs by contact with a warm body other than air.

37. INCUBATORS, ELECTRICAL. Complete incubators whose egg chambers are warmed by an electrical heater.

Search Class—

219—ELECTRIC HEATING AND RHEOSTATS, appropriate subclasses, for electric heating systems and electric heaters.

38. INCUBATORS, FIRELESS. Incubators wherein the incubating temperature is maintained in the egg chamber either by conserving the heat from a previous heating or by utilizing the heat resulting from organic fermentation or other heating process not due to combustion of fuel.

Search Classes—

62—REFRIGERATION, subclasses 10, Refrigerators; 11, Refrigerator buildings; 12, Refrigerator cars, and 23, Heat-insulated receptacles, for casings showing heat-insulation.

106—PLASTIC COMPOSITIONS, subclasses under 18, Heat-insulating, for heat-insulating compositions.

154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclasses 44, Heat-insulating coverings, and 45, Heat-insulating coverings, Air-spaced, for structure of heat-insulating coverings.

39. INCUBATORS, HOT AIR. Incubators provided with a hot-air system whose primary heater is located elsewhere than at one side or end of the hatching chamber, said primary heater being usually located at the center or below the center of the egg chamber.

Search Classes—

119—ANIMAL HUSBANDRY, subclass 31, Brooders.

126—STOVES AND FURNACES, subclass 85, Stoves, Heating, Liquid or gaseous fuel, Gas, for gas heaters of general application; subclass 96, Stoves, Heating, Liquid or gaseous fuel, Liquid, Wick, for wick-stove heaters of general application.

237—HEAT-DISTRIBUTING SYSTEMS, appropriate subclasses, particularly subclass 22, Brooder and incubator, Air, for hot-air-distributing systems *per se* for incubators.

40. INCUBATORS, HOT AIR, LATERAL HEATER. Incubators whose incubating temperature is maintained by a hot-air-distributing system the heater of which is located at one side of the egg chamber.

Search Classes—

119—ANIMAL HUSBANDRY, subclass 31, Brooders, and the subclasses thereunder.

237—HEAT-DISTRIBUTING SYSTEMS, subclass 23, Brooder and incubator, Water.

41. INCUBATORS, HOT WATER. Incubators having a hot-water system to maintain the incubating temperature the heater of which is not located at one side of the egg chamber.

Search Classes—

119—ANIMAL HUSBANDRY, subclass 31, Brooders, and the subclasses thereunder.

237—HEAT-DISTRIBUTING SYSTEMS, subclass 23, Brooder and incubator, Water.

CLASS 119—Continued.

42. INCUBATORS, HOT WATER, LATERAL HEATER. Incubators employing a hot-water system the heater of which is located at one side of the egg chamber.

43. INCUBATORS, TRAYS. Egg trays and nursery trays especially designed to hold eggs during the period of incubation and to receive and support young chicks for a brief period immediately following their "exclusion."

Search Class—

- 99—PRESERVING, subclass 2, Apparatus, for trays for storing eggs for preservation; subclass 6, Egg-testers, for trays designed to support eggs for testing purposes and usually so constructed as to facilitate the removal of the eggs from the testing machine.

44. INCUBATORS, TRAYS, EGG-TURNERS. Incubator egg trays designed to be used for supporting eggs in an incubator during the period of incubation and turning them for the purpose of presenting a fresh supply of egg food to the growing chick.

Search Class—

- 99—PRESERVING, subclass 2, Apparatus, for egg-turning devices employed in the art of preserving and generally adapted for use in cold storage chambers for turning the eggs through a wide angle for the purpose of preventing the yolk from settling out of its normal position.

45. NESTS AND NEST APPLIANCES. Miscellaneous small structures designed to serve as a place in which a single fowl may lay an egg and appliances limited to use with them. Nests are distinguished from laying houses in that the former are normally small, box-like, easily portable, partially open devices, limited in capacity to a single fowl and provided with nesting material or a nesting surface for receiving an egg, while the latter is a house or compartment in which several nests are placed.

46. NESTS AND NEST APPLIANCES, MEDICATED NEST-EGGS. Imitation eggs constructed of materials containing a medicament, such as an insecticide or a disinfectant, or so constructed that they may be charged with a volatile medicament.

47. NESTS AND NEST APPLIANCES, TRAP-NESTS, COMBINED. Limited to nests adapted to trap both the egg and the fowl or so constructed that they may readily be converted from an egg to a fowl trap-nest or vice versa.

48. NESTS AND NEST APPLIANCES, TRAP-NESTS, EGG. Nests provided with means for trapping the egg laid by the fowl, the egg being conveyed to a separate compartment and out of reach of the fowl.

49. NESTS AND NEST APPLIANCES, TRAP-NESTS, FOWL. Trap-nests provided with means to prevent the escape of the fowl until released by an attendant.

Search Class—

- 43—FISHING AND TRAPPING, subclasses 24, Traps, Self and ever-set, and 26, Traps, Victim-set, for traps of general application and details applicable to this art.

50. NESTS AND NEST APPLIANCES, TRAP-NESTS, FOWL, FOWL-RELEASED. Nests provided with means for automatically entrapping a fowl and excluding other fowls during the period of occupancy and so constructed that the entrapped fowl is automatically released and the trap reset by the escape of the fowl.

Search Class—

- 43—FISHING AND TRAPPING, subclass 24, Traps, Self and ever-set, for trap details.

51. FEEDING DEVICES. Miscellaneous inventions not otherwise classifiable specially adapted to the feeding of animals.

52. FEEDING DEVICES, HOPPERS AND TROUGHS. Miscellaneous combinations of a supply hopper and feed trough not otherwise classifiable. The hopper is any receptacle so related to the trough that it serves as the primary depository for the food which may be fed therefrom into the trough.

Search Class—

- 119—ANIMAL HUSBANDRY, subclass 65, Feeding devices, Feed-bags.

53. FEEDING DEVICES, HOPPERS AND TROUGHS, ADJUSTABLE SUPPLY. Devices comprising in addition to the combined hopper and trough a means for regulating the amount of feed passing from the hopper to the trough, said means consisting usually of a manually adjustable valve or other device performing the function of a flow regulator.

Search Classes—

- 83—MILLS, various subclasses thereunder, and 111, SEEDERS AND PLANTERS, appropriate subclasses, for other devices which regulate the flow of grain or ground feed from a hopper.

54. FEEDING DEVICES, HOPPERS AND TROUGHS, ANIMAL-CONTROLLED SUPPLY. Combined hoppers and troughs provided with means for causing or controlling the flow of feed from hopper to trough operated by pressure from the feeding animal, generally applied through the animal's nose or forehead.

Search Class—

- 119—ANIMAL HUSBANDRY, subclass 75, Watering devices, Fountains and troughs, Animal-controlled supply.

CLASS 119—Continued.

55. FEEDING DEVICES, HOPPERS AND TROUGHS, ANIMAL-CONTROLLED SUPPLY, PLATFORM. Combined hoppers and troughs having means whereby the weight of the feeding stock may control the flow of feed from hopper to trough or the uncovering of the trough, the essential feature lying in the fact that the stock seeking food controls access to it or the rate of its flow, or both, by stepping upon a platform or treadle.

Search Class—

- 119—ANIMAL HUSBANDRY, subclass 76, Watering devices, Fountains and troughs, Animal-controlled supply, Platform.

56. FEEDING DEVICES, HOPPERS AND TROUGHS, CHARGE-DELIVERING. Hoppers and troughs not otherwise classifiable provided with means whereby a "charge" or definite quantity of stock food may be delivered from the hopper into the trough or elsewhere upon movement of the charge-controlling mechanism.

Search Class—

- 161—TIME-CONTROLLING MECHANISM, subclass 10, Valve-actuating mechanism, Stock-feeders, for charge-delivering hoppers controlled by time-measuring devices.

57. FEEDING DEVICES, HOPPERS AND TROUGHS, MOVABLE-TROUGH CONTROLLED SUPPLY. The supply of feed from hopper to trough is controlled by a device operatively connected to the trough, which upon receiving a charge of feed moves said device to shut off the source of supply.

Search Class—

- 119—ANIMAL HUSBANDRY, subclass 81, Watering devices, Fountains and troughs, Movable-trough controlled supply.

58. FEEDING DEVICES, RACKS AND TROUGHS. Combinations of a rack for hay or coarse fodder and a trough for receiving and holding concentrated feed or for supporting the fodder in the rack or receiving it when dislodged from the rack.

Search Class—

- 119—ANIMAL HUSBANDRY, subclasses 10, Stock cars, Feeding and watering devices; 52, Feeding devices, Hoppers and troughs, and the subclasses thereunder, and 60, Feeding devices, Racks, for details.

59. FEEDING DEVICES, RACKS AND TROUGHS, ANIMAL-EXCLUDING. Combined racks and troughs having means to permit the exclusion of stock from the feed trough or rack, both or either, at the option of the attendant.

60. FEEDING DEVICES, RACKS. Apparatus for holding the various fodder and bulky food, specially designed to prevent the wasting of said foods and characterized by the presence of open slot-work, grids, or parallel bars for supporting or inclosing and preventing waste of fodder.

61. FEEDING DEVICES, TROUGHS. Miscellaneous feeding devices consisting of open receptacles specially designed to receive and hold feed accessible to animals. Trough guards and similar devices designed to prevent the fouling and wasting of feed are also included in this subclass.

Search Classes—

- 119—ANIMAL HUSBANDRY, subclass 72, Watering devices, for analogous devices; subclass 65, Feeding devices, Feed-bags, and the subclasses thereunder, for easily portable feed troughs, pails, and boxes performing the function of the conventional "nose bag."

- 220—METALLIC SHIPPING AND STORING VESSELS, subclass 125, Tanks, for metal troughs of general application.

62. FEEDING DEVICES, TROUGHS, ANIMAL-OPENED. Troughs normally closed, but adapted to be automatically opened by animals approaching them for the purpose of feeding.

63. FEEDING DEVICES, TROUGHS, ANIMAL-EXCLUDING. Troughs provided with means for excluding stock therefrom at the option of the attendant for the purpose of permitting him to place food in said trough without interference, of cleaning the same, or of limiting the quantity of food consumed.

Search Class—

- 119—ANIMAL HUSBANDRY, subclass 61, Feeding devices, Troughs, for troughs having a mere guard for preventing the fouling of food or for preventing the monopoly thereof by the stronger members of the feeding stock and which are not elsewhere placed.

64. FEEDING DEVICES, ANTICRIBBING. Devices to be applied to the manger or trough to discourage, prevent, or cure the habit of seizing, sucking, or biting the manger or trough.

Search Class—

- 119—ANIMAL HUSBANDRY, subclass 129, Restraining devices, Mouth-guards, and the subclasses thereunder, for devices applied to the head of the animal to prevent cribbing.

65. FEEDING DEVICES, FEED-BAGS. Miscellaneous bags, nose bags, pails, boxes, etc., specially designed to be employed in feeding animals and adapted to be placed easily in position and removed therefrom for transportation or storage, the invention lying primarily in the structure of the receptacle. Inventions residing in the apparatus employed in supporting the feed-bag in operative position are classified in one of the subclasses hereunder.

CLASS 119—Continued.

Search Classes—

- 74—MACHINE ELEMENTS, subclass 72, Elastic tension devices, and the subclasses thereunder, for elastic supports of general utility.
- 150—CLOTH, LEATHER, AND RUBBER RECEPTACLES, subclass 48, Baskets and buckets, for analogous devices of general utility.
- 242—WINDING AND REELING, subclass 107, Reeling and unreeling, Spring-drum type, and the subclasses thereunder, for spring-reel supports of general utility.
66. FEEDING DEVICES, FEED-BAGS, HALTER-SUPPORTED. Feed-bags adapted to be supported from the head of the feeding animal by means of straps, halters, bridles, or other devices capable of holding said receptacles in operative position wherein the claimed invention includes the structure of the supporting means.
67. FEEDING DEVICES, FEED-BAGS, HARNESS-SUPPORTED. Feed-bags provided with means for supporting them from the harness of an animal or some specially constructed devices secured to the animal about the base of the neck or body, or both, and designed so to support the receptacle as to allow free movement of the head of the animal with reference to said receptacle, the invention residing in the means of support rather than in the construction of the feed-bag.
68. FEEDING DEVICES, FEED-BAGS, POLE-SUPPORTED. Feed-bags provided with means for supporting them from the pole or thills of a vehicle, the invention residing in the supporting means rather than in the receptacle.
69. FEEDING DEVICES, FEED-BAGS, STANDARD-SUPPORTED. Feed-bags to be supported by a standard adapted to rest upon the ground.
- Search Class—
- 150—CLOTH, LEATHER, AND RUBBER RECEPTACLES, subclass 48, Baskets and buckets, and the subclasses thereunder.
70. FEEDING DEVICES, POULTRY-EXERCISING. Devices constructed to supply feed to poultry in a manner to promote exercise.
71. FEEDING DEVICES, SUCKLING APPLIANCES. Devices having one or more nipples and a corresponding number of tubes leading to a source of liquid-food supply, designed to be employed in conveying liquid nourishment to the young of mammals. These devices may be of comparatively large capacity, such as pails, tanks, or casks, and the suckling appliances suitable for young calves, colts, pigs, etc.
72. WATERING DEVICES. Inventions not otherwise classifiable especially designed for supplying animals with drink.
73. WATERING DEVICES, TEMPERATURE-CONTROLLING. Water holding devices for supplying stock involving a trough or the combination of a barometric fountain or other means of constant supply and a trough with means to prevent the freezing of the water or to regulate the temperature for other purposes.
- Search Classes—
- 62—REFRIGERATION, subclass 23, Insulated receptacles, for apparatus and methods relating to heat insulation.
- 106—PLASTIC COMPOSITIONS, subclass 18, Heat-insulating, and the subclasses thereunder, and 154, LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclasses 44, Heat-insulating coverings, and 45, Heat-insulating coverings, Air-spaced.
- 126—STOVES AND FURNACES, subclass 360, Water-heaters, Liquid or gaseous fuel, Submerged, and the subclasses under Water-heaters, Submerged, for tank and trough heaters *per se*.
- 137—WATER DISTRIBUTION, subclass 68, Tanks, Automatic, for automatic valve-controlled tanks provided with antifreezing means.
74. WATERING DEVICES, FOUNTAINS AND TROUGHS. Devices not otherwise classifiable specially designed to serve water to domestic animals, involving a trough and source of supply therefor.
- Search Classes—
- 119—ANIMAL HUSBANDRY, subclass 52, Feeding devices, Hoppers and troughs, for analogous structures designed to hold feed and usually involving those modifications incident upon the serving of solids instead of liquids.
- 72—MASONRY AND CONCRETE STRUCTURES, subclasses 13, Tanks; 137, WATER DISTRIBUTION, subclass 21, Tanks, and 217, WOODEN RECEPTACLES, subclass 4, Tanks, for tanks which may serve as a source of supply to a water trough or other receptacle.
- 220—METALLIC SHIPPING AND STORING VESSELS, subclass 125, Tanks, for metallic tanks and troughs of general application.
75. WATERING DEVICES, FOUNTAINS AND TROUGHS, ANIMAL-CONTROLLED SUPPLY. Animal-watering fountains and troughs comprising a source of supply, a valve controlling said supply, and means operatively connected to said valve and operable by pressure exercised by the animal, generally by the nose or forehead, for regulating the supply to the trough.
- Search Class—
- 119—ANIMAL HUSBANDRY, subclass 54, Feeding devices, Hoppers and troughs, Animal-controlled supply, for details.
76. WATERING DEVICES, FOUNTAINS AND TROUGHS, ANIMAL-CONTROLLED SUPPLY, PLATFORM. Stock-watering fountains and troughs comprising a source of supply and a means for controlling the source of supply adapted to be operated by the weight of the animal seeking water, generally applied by stepping upon a platform or treadle.

CLASS 119—Continued.

Search Classes—

- 119—ANIMAL HUSBANDRY, appropriate subclasses under 51, Feeding devices, for details.
- 103—PUMPS, subclass 5, Cattle, for devices which are operated by an approaching animal to pump water into a trough.
77. WATERING DEVICES, FOUNTAINS AND TROUGHS, BAROMETRIC. Stock-watering fountains and troughs comprising a barometric fountain so related to the trough as to afford a constant supply of water to said trough at a fixed level.
- Search Classes—
- 119—ANIMAL HUSBANDRY, subclass 73, Watering devices, Temperature-controlling.
- 62—REFRIGERATION, subclass 13, Water-coolers.
- 120—STATIONERY, subclass 59, Inkstands, Barometer.
- 221—DISPENSING CANS.
78. WATERING DEVICES, FOUNTAINS AND TROUGHS, FLOAT-CONTROLLED SUPPLY. Combined fountains and troughs wherein the supply to the trough is controlled by a float valve.
- Search Class—
- 137—WATER DISTRIBUTION, subclass 68, Tanks, Automatic, for fountains and troughs automatically controlled by a float where the means of control usually consists of an inlet valve so related to a float that the level of the liquid supplied is maintained at a predetermined point.
79. WATERING DEVICES, FOUNTAINS AND TROUGHS, FLOAT-CONTROLLED SUPPLY, OSCILLATING VALVE. Fountains and troughs wherein a float-operated, hinged, flap, or oscillating valve controls the supply conduit.
80. WATERING DEVICES, FOUNTAINS AND TROUGHS, FLOAT-CONTROLLED SUPPLY, RECIPROCATING VALVE. Fountains and troughs having a float-operated reciprocating valve controlling the source of supply.
81. WATERING DEVICES, FOUNTAINS AND TROUGHS, MOVABLE - TROUGH CONTROLLED SUPPLY. Fountains and troughs having depressible water receptacles connected to a water-supply valve, so as to hold it open when in its uppermost position. The weight of the water in the receptacle causes the trough to move and close the supply valve.
82. GANGWAYS. Devices which comprise a floored, narrow, fenced structure specially adapted to serve as a bridge for supporting, conveying, or directing live stock to or from a platform, stock car, etc.
- Search Classes—
- 14—BRIDGES, subclasses 1, Miscellaneous; 31, Draw; 70, Gangways, Endless conveyer, and 72, Gangways, Unattached; 57, HOISTING, subclass 18, Skids; and 105, RAILWAY ROLLING-STOCK, subclass 21, Cars, Safety bridges, for analogous structures.
83. GROOMING DEVICES. Miscellaneous inventions not otherwise classifiable specially adapted for currying, brushing, cleaning, massaging, or rubbing the coat of an animal.
- Search Class—
- 15—BRUSHING AND SCRUBBING, especially subclass 31, Brush heads and faces, Horse-brushes, for brushing and scrubbing devices of general application; subclass 37, Brush heads and faces, Rotary brushes, for grooming devices consisting of a rotary brush.
84. GROOMING DEVICES, PNEUMATIC. Compressed air or vacuum machines specially adapted to the grooming of live stock. Groomers are distinguished from currycombs in that the former are usually constructed with soft rubber or brushing elements or with a wide pneumatic nozzle, in each case the function being that of removing material loosely adhering to the animal, while the latter is provided with more or less rigid teeth or with plain or serrated knife-like bars designed to dislodge or loosen dirt, hair, filth, or vermin closely adhering to the epidermis, the grooming process usually involving (1) the use of the currycomb and (2) the use of brushes or similar grooming devices.
- Search Classes—
- 15—BRUSHING AND SCRUBBING, subclass 8, Carpet-cleaners, for nozzles and for combinations thereof with an air-moving element, designed for cleaning fabrics, floors, casings, etc.
- 83—MILLS, subclasses under Dust-collectors, for dust-collectors, dust-traps, and devices for purifying the atmosphere.
- 230—AIR AND GAS PUMPS, for air pumps employed in these pneumatic cleaning devices.
85. GROOMING DEVICES, COMBINED. Combined currycombs and brushes, sweat and hair removers, mane and tail cards, or combinations of two distinct grooming mechanisms.
- Search Class—
- 132—TOILET, subclass 3, Combs, for combined devices covering a brush and a toilet comb.
86. GROOMING DEVICES, CURRYCOMBS. Grooming devices not otherwise classifiable adapted in structure to scrape or comb the coat of a domestic animal.
- Search Class—
- 132—TOILET, subclass 3, Combs, and the subclasses thereunder, for analogous devices.
87. GROOMING DEVICES, CURRYCOMBS, DUST AND VERMIN TRAP. Currycombs possessing special devices for trapping dust and vermin during the process of currying or grooming.

CLASS 119—Continued.

88. GROOMING DEVICES, CURRYCOMBS, SELF-CLEANING. Currycombs provided with means for dislodging hair and dirt from the teeth and comb body.
89. GROOMING DEVICES, CURRYCOMBS, CURVED AND RETICULATED WIRE. Currycombs whose "teeth" or rubbing surfaces are formed of wire fabric or wire in the form of loops or curves.
90. GROOMING DEVICES, CURRYCOMBS, PLAIN BAR. Currying devices characterized by the absence of teeth and having the rubbing surface composed of straight, curved, or coiled bars or strips of metal or other solid substances.
91. GROOMING DEVICES, CURRYCOMBS, ROTARY. Currycombs having one or more rotatable combs designed to be rotated by frictional contact with the surface to which it is applied or otherwise.
- Search Class—**
15—BRUSHING AND SCRUBBING, subclasses 37, Brush heads and faces, Rotary brushes, and 60, Carpet-sweepers, and 13, BRAKES AND GINS, subclass 11, Gin-brushes, for details.
92. GROOMING DEVICES, CURRYCOMBS, SERRATED BAR. Currycombs whose friction surfaces are formed of serrated or notched bars, bands, or strips.
93. GROOMING DEVICES, CURRYCOMBS, SPIKE-TOOTHED. Currycombs having wire studs or spikes or having more or less spike-like projections for the comb surfaces.
- Search Class—**
132—TOILET, subclass 3, Combs, and the subclasses thereunder, for toilet combs spike-toothed.
94. GROOMING DEVICES, CURRYCOMBS, HANDLES. Grasping devices, finger holds, and all means designed to facilitate the holding of currying devices, including also specific means for securing the handles to the frame or plate, said handles being specially designed to meet the requirements of the hand in the various positions assumed in the process of grooming.
95. MANURE-POUCHES. Devices in the form of pouch-like receptacles designed and constructed to be so placed in relation to a domestic animal as to receive the fecal droppings therefrom.
96. RESTRAINING DEVICES. Miscellaneous inventions not otherwise classifiable designed to limit or restrain the free movements of animals.
97. RESTRAINING DEVICES, POULTRY. Miscellaneous restraining devices particularly applicable to fowls.
98. RESTRAINING DEVICES, STOCKS. Restraining devices not otherwise classifiable specially constructed and designed to hold securely without injury an animal in a substantially immovable position, to facilitate the application of other restraining devices, the removal of its coat, the performance of surgical operations, etc.
- Search Class—**
17—BUTCHERING, subclass 30, Slaughtering, elevating, and suspending, for devices employed in holding animals for slaughtering.
99. RESTRAINING DEVICES, STOCKS, COMBINED CRATES AND NECK-STOCKS. Combinations of crates and crate-like structures for limiting the movement of the animal's body in a lateral direction and a neck or head embracing means designed to hold the animal's head in a comparatively immovable position.
- Search Class—**
119—ANIMAL HUSBANDRY, subclasses 20, Confining and housing devices, Pens and racks, and 147, Restraining devices, Stanchions, for details; also 13, Stock cars, Safeguards.
100. RESTRAINING DEVICES, STOCKS, COMBINED SLINGS AND HOPPLES. Animal stocks involving the combination of a sling for raising or partially raising the animal off its feet and a hopple for holding one or more of the feet in comparatively immovable position.
- Search Classes—**
119—ANIMAL HUSBANDRY, subclasses 102, Restraining devices, Stocks, Slings, and 126, Restraining devices, Hopples, for details.
5—BEDS, subclasses 44, Bedsteads, Invalid, Lifters and conveyers, and 45, Bedsteads, Invalid, Vertically-moving frame; 17, BUTCHERING, subclass 30, Slaughtering, elevating, and suspending; and 57, HOISTING, appropriate subclasses, for analogous devices.
101. RESTRAINING DEVICES, STOCKS, HARNESS. Animal stocks characterized by the employment of harness and harness elements in firmly securing the animal to a more or less rigid structure or in hampering its movements.
- Search Classes—**
119—ANIMAL HUSBANDRY, subclass 29, Breaking and training devices.
54—HARNESS, subclass 71, Breaking and training devices.
102. RESTRAINING DEVICES, STOCKS, SLINGS. Animal stocks comprising a sling or a wide, usually flexible, supporting means designed to be passed beneath the animal and provided with means for partially or wholly raising it off its feet.

CLASS 119—Continued.

- Search Class—**
5—BEDS, subclasses 44, Bedsteads, Invalid, Lifters and conveyers, and 45, Bedsteads, Invalid, Vertically-moving frame, for details in slings and means for operating them.
103. RESTRAINING DEVICES, STOCKS, TABLES AND TRAYS. Animal stocks comprising a table or tray, usually tiltable, having means whereby the animal may be secured thereto so firmly as to be comparatively helpless.
- Search Classes—**
5—BEDS, subclasses 9, Bedsteads, Folding, and 12, Bedsteads, Invalid; 45, FURNITURE, subclasses under Tables, Adjustable, and 50, Tables, Surgical; and 156, CHAIRS, subclass 23, Chairs, Surgical, for details.
104. RESTRAINING DEVICES, BLINDERS. Devices adapted to obscure the sight of an animal to cure or prevent fence jumping or to render the animal more easily controllable in case of fire, accident, or when being trained.
- Search Class—**
54—HARNESS, subclasses 10, Bridles, Blinds, and 11, Bridles, Blinds, Covering and uncovering, for devices designed partially to obstruct the vision of the animal wearing them.
105. RESTRAINING DEVICES, COW-TAIL HOLDERS. Devices particularly adapted to hold a cow's tail in such a position that it can not be switched freely.
- Search Classes—**
119—ANIMAL HUSBANDRY, subclass 128, Restraining devices, Hopples, Shackles.
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 243, Clasps, and 264, Clasps, Wedge-slot, and 144, WOODWORKING, subclass 302, Clamps, Portable, Pivoted lever, for clasps and clamps of analogous structure.
54—HARNESS, subclass 78, Tail-holders, for animal-tail-holders of general application.
106. RESTRAINING DEVICES, COLLARS. Neck-embracing bands, chains, or other flexible devices not otherwise classifiable designed to afford a means for attaching a lead-line or tether to an animal, for supporting a bell, tag, etc., or providing protection against enemies. Excludes draft collars, which are deemed to be harness.
- Search Classes—**
119—ANIMAL HUSBANDRY, subclass 118, Restraining devices, Hitching, Ties, and 54, HARNESS, subclasses 24, Halters, and 34, Hitching straps, for collars which are formed of a part of the tethering means.
63—JEWELRY, subclass 3, Bracelets, and the subclasses thereunder, and 241, GARMENT-SUPPORTERS, subclasses 5, Limb-encircling; 6, Limb-encircling, Garment-attached, and 8, Waist-line body-garments, Belts, for analogous structures.
107. RESTRAINING DEVICES, DRAGS AND WEIGHTS. Weights, impeding drags, inertia balls, friction floats, flexible hooking means, and miscellaneous devices designed to be attached to the animal by means of a tether, the drag or weight being adapted to restrain the animal by coming in contact with a barrier or by its weight or construction, whereby it resists being moved along the surface of the ground.
108. RESTRAINING DEVICES, HAMPERING PADS. Devices consisting of bands or pads provided with spurs or other pain inflicting means so placed about the throat, neck, or body that the attempt of the animal to break down a fence, gnaw a feed manger, or lie down causes the infliction of pain upon the animal wearing the device.
- Search Class—**
119—ANIMAL HUSBANDRY, subclass 129, Restraining devices, Mouth-guards, for the various weaning devices provided with spurs designed to inflict pain upon animals other than the wearer.
109. RESTRAINING DEVICES, HITCHING. Devices not otherwise classifiable designed to be used in securing or tethering an animal.
- Search Class—**
54—HARNESS, subclass 34, Hitching straps, for tethers.
110. RESTRAINING DEVICES, HITCHING, RELEASES. Miscellaneous devices, not included in the minor subclasses of releases, specially designed quickly to release an animal. Includes devices for releasing a flexible hitching means from the part to which it is attached, and for releasing doors, stall partitions, and other similar elements.
- Search Classes—**
119—ANIMAL HUSBANDRY, subclass 148, Restraining devices, Stanchions, Multiple, for devices unlocking a multiplicity of stanchions.
21—CARRIAGES AND WAGONS, subclass 75, Horse-detachers, for emergency detaching devices and details.
39—FENCES, subclass 103, Gates, Race-starters, for devices designed to release a plurality of barriers.
43—FISHING AND TRAPPING, subclass 25, Traps, Sporting, for releasing devices designed to set free a bird or animal from a cage and usually constructed to expel them or frighten or otherwise facilitate their exit.
54—HARNESS, subclass 69, Attaching and detaching devices, showing harness freed from thills.
114—SHIPS, subclass 210, Anchor-trippers; subclass 217, Tension-relievers, Couplers, Safety-release, for safety releasing devices.

CLASS 119—Continued.

111. **RESTRAINING DEVICES, HITCHING, RELEASES, WITH LEAD-LINE.** Hitching devices provided both with releasing mechanism and a line, chain, wire, or similar flexible means for leading the stock from the stalls or barn. The releasing device may be any of the types of releases, and the lead-line operated by hand or by a windlass or other means.

112. **RESTRAINING DEVICES, HITCHING, RELEASES, WITH SPRAYER.** Releasing devices combined with spraying systems, the latter being designed primarily to throw water upon the animal to hasten its exit, but also serving incidentally to protect the animal and to extinguish a fire adjacent thereto.

Search Classes—

- 119—ANIMAL HUSBANDRY, subclass 159, Antivermin treatment, Dusting and spraying, and 169, FIRE-EXTINGUISHERS, subclass 20, Stationary systems, and the subclasses thereunder, for stationary sprinkling systems.

113. **RESTRAINING DEVICES, HITCHING, RELEASES, ELECTRIC.** Tether-releasing mechanism operated or controlled by an electromagnet or equivalent.

Search Classes—

- 178—TELEGRAPHY, subclass 162, Telegraphs, Fire, Engine-house apparatus, for electromagnets employed to unlock or unlatch doors or shutters.

- 169—FIRE-EXTINGUISHERS, subclasses 21, Stationary systems, Automatic, and 22, Stationary systems, Automatic valve, for automatic valve-operating mechanism released by an electromagnet.

114. **RESTRAINING DEVICES, HITCHING, RELEASES, HALTER-SNAP.** Releases characterized by means adapted to unlock or open a special halter-snap or lock secured to the tethering means and designed to disconnect either at the halter or the hitching post, the releasing mechanism being carried by the tether rather than by the structure within which or to which the animal is hitched.

Search Classes—

- 54—HARNESSES, subclass 69, Attaching and detaching devices, for details.

- 114—SHIPS, subclass 217, Tension-relievers, Couplers, Safety-release.

115. **RESTRAINING DEVICES, HITCHING, RELEASES, RECIPROCATING BAR.** Releases in combination with bars, rods, wires, or similar elements operatively related thereto, so that upon being given an endwise movement the releasing means will be moved to release the hitching connections to the animal, a single reciprocatory element usually controlling a plurality of releases.

Search Class—

- 21—CARRIAGES AND WAGONS, subclass 75, Horse-detachers, for releasing devices operated by the driver in the vehicle to release the draft animal therefrom. Usually the tugs are released from the whiffletree by reciprocating mechanism.

116. **RESTRAINING DEVICES, HITCHING, RELEASES, ROTATABLE SHAFT.** Releaseable hitching devices comprising a rotatable shaft operatively related to the tether-holding means and so connected therewith that upon the rotation of the shaft the tethering means will be released.

117. **RESTRAINING DEVICES, HITCHING, ROTARY ARM.** Hitching devices consisting of a support, such as a post or picket, upon which is rotatably secured an arm or similar device to which a tether may be secured.

Search Class—

- 119—ANIMAL HUSBANDRY, subclass 124, Restraining devices, Hitching, Posts, Automatic take-up, for many devices containing the automatic take-up feature similar in function to that shown in this subclass (117).

118. **RESTRAINING DEVICES, HITCHING, TIES.** Hitching devices of a miscellaneous nature having a neck-engaging apparatus which is usually flexibly united to a tethering means, the neck-engaging device being constructed of a looped chain, a metallic or wooden bow or loop, or similar appliance not otherwise classifiable.

Search Classes—

- 54—HARNESSES, subclasses 24, Halters, and 34, Hitching straps, for details.

- 59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 93, Chains, Attachments.

119. **RESTRAINING DEVICES, HITCHING, TIES, MOVABLE.** Hitching ties combined with a slidable or pivoted device to which the animal is tethered, designed to give freedom of movement, particularly in a vertical direction, and to minimize the danger of casting.

120. **RESTRAINING DEVICES, HITCHING, TRAVELER.** Hitching devices comprising a tether attachment or tether-carrying device so supported as to have limited movement imparted by the tethered animal, the tether-carrying means being itself carried by a trolley, thimble, ring, or carriage along a track.

121. **RESTRAINING DEVICES, HITCHING, PICKET-STAKES.** Devices easily portable and readily driven into the ground that are adapted to receive and to hold securely one end of a tethering device, the upper part of the stake being constructed to hold the tether in whatever direction the strain may be.

CLASS 119—Continued.

Search Classes—

- 119—ANIMAL HUSBANDRY, subclass 117, Restraining devices, Hitching, Rotary arm, for an arm support often carried by a picket-stake.

- 135—TENTS, CANOPIES, UMBRELLAS, AND CANES, subclass 15, Tents, Pegs, poles, and cover-fasteners, for tent pins designed to resist strain only in one direction and to hold the tent rope securely only when the pull is in the direction of the strain-resisting feature.

- 169—METALLIC BUILDING STRUCTURES, subclasses 30, Electric-wire supports, Telegraph-poles, Bases, Anchored, Augers; 91, Land-anchors, Augers, for picket stakes and pins having a spiral shank adapting them to be screwed into the ground, and 92, Land-anchors, Expanding, for stakes of general application provided with an expansible member.

122. **RESTRAINING DEVICES, HITCHING, POSTS.** Miscellaneous stationary posts, subterranean casings, and other stationary tether-supporting means not classifiable in the remaining subclasses of this art and which are specially designed to serve as tether-supporting devices.

Search Classes—

- 20—WOODEN BUILDINGS, subclass 97, Wooden columns, for wooden posts of general application.

- 39—FENCES, subclasses under Posts, and 68, LAUNDRY, subclass 12, Clothes-line fasteners, for details.

- 72—MASONRY AND CONCRETE STRUCTURES, subclass 82, Posts, for concrete posts of general application.

- 169—METALLIC BUILDING STRUCTURES, subclasses 23, Electric-wire supports, Telegraph-poles, and 38, Columns, for metallic posts of general application.

123. **RESTRAINING DEVICES, HITCHING, POSTS, ATTACHMENTS.** Devices specially designed to connect a tethering means to a post or stationary support.

124. **RESTRAINING DEVICES, HITCHING, POSTS, AUTOMATIC TAKE-UP.** Hitching posts, whether located above or below the surface of the ground, containing or supporting a direct-acting means for automatically retracting a tethering device, said means usually consisting of a weight, spring reel, or spiral spring so related to the tether that when said tether is pulled from the post a weight will be lifted or a spring placed under tension, all designed to maintain the tether taut or to withdraw it into the post.

Search Classes—

- 119—ANIMAL HUSBANDRY, subclass 117, Restraining devices, Hitching, Rotary arm, for means for causing the rotary arm to take up the slack to the tether, both to prevent the tethered animal from becoming entangled and to offer a yielding resistance to a severe strain.

- 74—MACHINE ELEMENTS, subclasses 72, Elastic tension devices, and the subclasses thereunder, and 68, Springs, for tension elements.

- 242—WINDING AND REELING, appropriate subclasses, for spring-operated winding drums of general utility.

125. **RESTRAINING DEVICES, HITCHING, POSTS, DISAPPEARING.** Posts and similar tether-supporting means provided with casings below the level of the ground surface so constructed that the post may be let down into the casing.

Search Class—

- 68—LAUNDRY, subclass 12, Clothes-line fasteners.

126. **RESTRAINING DEVICES, HOPPLES.** Restraining means designed to hamper the free movement of the animal by interfering with limb action or head movement, the ultimate purpose being to discourage or prevent kicking or leaping and breaking down fences.

127. **RESTRAINING DEVICES, HOPPLES, FETTER-BARS.** Hopples having bars, stays, or other bracing adapted to be so placed on the limb of a domestic animal as to interfere with or prevent the flexing of said limb, the bracing elements being secured usually on both sides of the joint.

128. **RESTRAINING DEVICES, HOPPLES, SHACKLES.** Hopples in the form of rings, bracelets, or limb-clamping devices not otherwise classifiable designed to be secured about some part of the animal's limbs and so connected to other devices carried by the animal as to prevent free movement of the hampered limbs. Specially adapted to domestic live stock.

Search Class—

- 70—LOCKS AND LATCHES, subclass 24, Shackles, for shackles of general application.

129. **RESTRAINING DEVICES, MOUTH-GUARDS.** Anticribbing appliances, gags, and other means for limiting the animal's use of its mouth not otherwise classifiable.

130. **RESTRAINING DEVICES, MOUTH-GUARDS, MUZZLES.** Halter-supported nose bands, plates, or spike-carrying devices not otherwise classifiable and which are designed to serve as weaning devices or as means for restraining, controlling, or breaking feeding habits.

131. **RESTRAINING DEVICES, MOUTH-GUARDS, MUZZLES, BAFFLES.** Muzzles having as essential elements single plates, open-work guards, or other similar structures so supported as to be capable of being oscillated to permit grazing, but so arranged that upon the animal's raising its head the baffle will fall over the mouth.

CLASS 119—Continued.

132. **RESTRAINING DEVICES, MOUTH-GUARDS, MUZZLES, BAFFLES, NOSTRIL-ATTACHED.** Baffles adapted to be secured to the nostrils.
133. **RESTRAINING DEVICES, MOUTH-GUARDS, MUZZLES, CAGE FORM.** Muzzles of open-work cage-like structure that normally entirely inclose the mouth, being either rigid in structure or composed of two or more hinged or reciprocating parts, which open automatically upon the animal's lowering its head to graze.
134. **RESTRAINING DEVICES, MOUTH-GUARDS, WEANING BITS.** Mouth-guards superficially resembling bridle bits and designed to be placed in an animal's mouth, the bit usually being a hollow perforated element, close spiral, or similar device constructed to prevent the formation of a "sucking" vacuum.
- Search Class—**
128—SURGERY, subclass 27, Veterinary, for ventilating bits used to cure or prevent colic.
135. **RESTRAINING DEVICES, NOSE RINGS AND CLIPS.** Rings, plugs, loops, clamps, clips, and other similar devices specially designed to be attached to the nostrils or snout-rings of domestic animals. These devices are designed to be permanently attached and are such as are limited in use to animal husbandry.
- Search Classes—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 238, Snap-hooks, Sliding; 241, Snap-hooks, Locking devices, and 242, Snap-hooks, Locking devices, Tension-operated, for detachable rings, loops, etc., of general application; and 243, Clasps, and the subclasses thereunder, for detachable gripping devices.
59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclasses 85, Chains, Links, Detachable, and 96, Key-holders, and the subclasses thereunder, for detachable metallic loops and similar devices.
136. **RESTRAINING DEVICES, POKES.** Devices comprising a rod or a combination of rods or similar elements supported by a head, neck, limb, or body embracing means all cooperating to discourage or prevent breaking, leaping, or passing through fences or similar barriers.
137. **RESTRAINING DEVICES, POKES, BAR AND BELT.** Pokes having a rod or pole whose principal posterior support consists of a belt or band passing around the animal's body adjacent to his fore legs, the anterior support of said poke being usually a neck-band or halter, or both.
138. **RESTRAINING DEVICES, POKES, BAR AND BOW.** Pokes having a bow, yoke, or neck-band, in combination with a rod, bar, or similar element, the bow and bar being rigidly connected, the former being designed to embrace the neck of the animal and the latter to contact with a fence for the purpose of discouraging or preventing the wearer from leaping fences or breaking through them.
139. **RESTRAINING DEVICES, POKES, BAR AND BOW, JOINTED BOW.** Pokes of the bar and bow type wherein the bow, yoke, or neck-band is jointed, so that its parts may freely move relatively to each other. Includes the jointed bow, whether claimed by itself or in combination with the poke.
140. **RESTRAINING DEVICES, POKES, BAR AND BOW, PIVOTED BAR.** Pokes of the bar and bow type having the bar, rod, or poke pivoted or so connected to the bow or yoke that it may freely move in relation thereto.
141. **RESTRAINING DEVICES, POKES, BAR AND HALTER.** Poke bars or equivalents supported by a halter or halter-like device adapted to embrace the animal's head.
142. **RESTRAINING DEVICES, POKES, FACE-GUARDS.** Bars, rods, face plates, or flexible elements supported by the animal's head, located in front of his face, and usually provided with means for inflicting pain upon the animal when it pushes the face-guard against an obstruction.
143. **RESTRAINING DEVICES, SHIELDS.** Easily portable devices not otherwise classifiable designed to be secured to an animal to protect it against enemies or to prevent its doing injury to itself or an attendant.
144. **RESTRAINING DEVICES, SHIELDS, HORN.** Shields adapted in structure to receive the tips of an animal's horns or otherwise to muffle the horn tips.
145. **RESTRAINING DEVICES, SHIELDS, STALLION.** Devices for preventing the practice of self-abuse among stallions.
146. **RESTRAINING DEVICES, SHIELDS, UDDER.** Devices specially adapted to protect the udders or teats of mammals against injury.
147. **RESTRAINING DEVICES, STANCHIONS.** Devices comprising as a unit two adjacent, vertical bars, one or both pivotally supported and capable of being moved away from a central vertical line to admit the head and neck of the animal to be restrained and then moved toward said line to embrace the neck and prevent withdrawal of the head, a device for locking the stanchion bars in neck-embracing position being usually a necessary element of the operative combination. In this subclass are placed all stanchions and stanchion elements not otherwise classifiable which are

CLASS 119—Continued.

- restricted in use to the restraining of live stock. Stanchions differ from the neck-stocks found in animal-stocks in that they permit more or less freedom of movement, the latter being more rigid in structure and designed to reduce to a minimum the movement of the head and neck, while the former are designed simply to prevent the escape of the animal from its stall and to segregate it for feeding and housing purposes.
148. **RESTRAINING DEVICES, STANCHIONS, MULTIPLE.** Combinations of two or more stanchion sets, usually connected with a common controlling means, whereby they may be simultaneously released or locked by an attendant, so that two or more head of stock may be locked in or released from said stanchions by the movement of a single element.
149. **RESTRAINING DEVICES, STANCHIONS, ROTATABLE.** Stanchions rotatable about a vertical axis, without provision for preventing rotation while said stanchions are open for admission of an animal's head.
150. **RESTRAINING DEVICES, STANCHIONS, ROTATABLE, STOP-LOCK.** Rotatable stanchions having means for preventing rotation when the stanchion bars are open to admit the animal's head.
151. **RESTRAINING DEVICES, CATCHING AND HOLDING TOOLS.** Tools not otherwise classifiable designed to be manipulated by an attendant to catch and to hold a domestic animal. Such tools are usually provided with a handle at one end and a catching and holding device at the other specially designed to embrace some part of the animal and to be readily detached therefrom without inflicting injury.
- Search Class—**
43—FISHING AND TRAPPING, subclass 12, Fishing, Oyster rakes and tongs, for somewhat similar tools designed to be used in dredging mollusks, but not adapted to catch and hold live stock without injury.
152. **RESTRAINING DEVICES, CATCHING AND HOLDING TOOLS, CROOKS.** Catching and holding tools provided with a hook-like element, usually having the form of a shepherd's crook.
- Search Classes—**
24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 4, Article-holders, Chatelaine safety-hooks, and 264, Clasps, Wedge-slots, and 59, CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 94, Chains, Attachments, Hooks and grabs, for the hook element *per se*.
153. **RESTRAINING DEVICES, CATCHING AND HOLDING TOOLS, LOOPS.** Catching and holding tools provided with a loop, the loop usually being placed or thrown about the nose, head, neck, or limb.
- Search Class—**
128—SURGERY, subclass 28, Miscellaneous, for analogous structure, noting "écraseurs," or instruments for removing intranasal growths; and subclass 27, Veterinary, noting obstetrical devices.
154. **RESTRAINING DEVICES, CATCHING AND HOLDING TOOLS, TONGS.** Catching and holding tools provided with jaws or tong fingers specially adapted to embrace and to hold without injury some part of a domestic animal.
- Search Classes—**
65—KITCHEN AND TABLE ARTICLES, subclasses 52, Table-tongs, and 56, Compound tools, Gripping, and 126, STOVES AND FURNACES, subclasses 320, Stove implements, Combined, and 321, Stove implements, Fire-tong, for details.
68—LAUNDRY, subclass 6, Clothes sticks and tongs, for analogous structures.
128—SURGERY, subclass 27, Veterinary, noting pig-tongs and similar obstetrical devices.
155. **STOCK-SORTERS.** Means operated manually, automatically, or by the animal to control the size or kind of animal that shall pass a given barrier and designed to separate one class or size of domestic animal from another.
156. **ANTIVERMIN TREATMENT.** Inventions for washing, applying medicaments to, or otherwise treating animals for the purpose of freeing them from filth and parasites or for repelling insects, healing sores, etc. Does not include "dips" or other compositions nor internal medical treatment nor surgical operations.
157. **ANTIVERMIN TREATMENT, DAUBING AND RUBBING.** Inventions for applying a medicament to animals by contact or friction. Includes rubbing posts, fowl-greasing, and nose-tarring devices.
158. **ANTIVERMIN TREATMENT, DIPPING AND WASHING.** Inventions relating to the dipping or washing of animals in an insecticidal or cleansing liquid and includes both the dipping or washing vat and the means employed to insure the immersion or washing of the animal under treatment.
159. **ANTIVERMIN TREATMENT, DUSTING AND SPRAYING.** Devices specially adapted to apply an insecticide or the like in the form of a fine powder or spray to domestic fowls and stock, usually operated by the animal.
- Search Class—**
137—WATER DISTRIBUTION, appropriate subclasses, for spraying apparatus of general application.
160. **ANTIVERMIN TREATMENT, FUMIGATING.** Inventions specially constructed to aid in the application of fumes to a fowl or other animal.

CLASS 120.—STATIONERY.

DEFINITIONS.

Class.

This class is limited to implements for use in penmanship and clerical work and includes all such implements except such as are more properly classified elsewhere because of more general utility.

Subclasses.

1. COMBINATION DEVICES. Articles of stationery in which are combined two or more devices having different functions.
Search Class—
7—COMPOUND TOOLS, subclass 2, Miscellaneous, Integral.

2. COMBINATION DEVICES, BLOTTERS AND RULERS. Devices adapted to serve as blotters and as rulers.

3. COMBINATION DEVICES, INKSTANDS AND CALENDARS. Inkstands provided with calendar attachments.

4. COMBINATION DEVICES, INKSTANDS AND PEN-RACKS. Combined inkstands and pen-racks.

5. COMBINATION DEVICES, INKSTANDS AND PEN-RACKS, SELF-OPENING. Combined inkstands and pen-racks so constructed that the removal of a pen from the rack causes the inkstand to open.

6. COMBINATION DEVICES, MOISTENERS AND SEALERS. Implements and machines for both moistening and sealing the flaps of envelopes.

Search Classes—

- 93—PAPER MANUFACTURES, subclass 2, Wrapping machines, Miscellaneous.

- 216—LABEL PASTING AND PAPER HANGING, subclass 3, Combined Machines, Envelop sealing and stamping.

7. COMBINATION DEVICES, PENCIL-SHARPENERS AND ERASERS. Combined pencil-sharpeners and erasers, most of them being designed for attachment to a pencil and serving as point-protectors as well.

8. MISCELLANEOUS. Various devices for use in clerical work, such as paper-folders, paper-tearers, linen-markers, etc.

9. PEN AND PENCIL CASES. Devices known to the trade as propelling pencils and pen-holders, together with other devices for adjustably holding pencils, leads, crayons, and tailors' chalk.

Search Class—

- 145—WOODWORKING-TOOLS, subclass 64, Handles, Hollow, Retractable-tool.

10. PEN AND PENCIL CASES, COMPOUND. Pen and pencil cases in each of which are embodied two or more different forms of operating mechanism.

11. PEN AND PENCIL CASES, COMPOUND, AUTOMATIC. Compound pen and pencil cases in which one or more of the operating mechanisms is automatic.

12. PEN AND PENCIL CASES, COMPOUND, SCREW-AND-SLIDE. Compound pen and pencil cases in which the propelling mechanisms are of the screw-and-slide types.

13. PEN AND PENCIL CASES, CHALK-HOLDERS. Holding devices for chalk or crayons, especially tailors' chalk.

14. PEN AND PENCIL CASES, POLYPOINTED. Magazine pen and pencil cases in which are contained a number of leads or pen-points.

Search Class—

- 145—WOODWORKING-TOOLS, subclass 63, Handles, Magazine, Registering-chambers.

15. PEN AND PENCIL CASES, SHARPENING. Pen and pencil cases provided with mechanism for sharpening the lead.

16. PEN AND PENCIL CASES, MAGIC. Cases so constructed that the pen or lead holder is protruded by moving some part of the case in the direction opposite to that in which the pen or lead holder moves when it is protruded.

17. PEN AND PENCIL CASES, STEP-BY-STEP. Cases provided with mechanism which projects the lead a predetermined amount at each operation of the mechanism.

18. PEN AND PENCIL CASES, SCREW. The pen or lead holder is protruded by screw mechanism.

19. PEN AND PENCIL CASES, SLIDE. The pencil, lead, or pen holder slides within the case and is protruded by the direct action of the fingers of the user or by means of a sliding member which may be secured to the holder or simply push it forward.

CLASS 120—Continued.

20. PEN AND PENCIL CASES, AUTOMATIC-CATCH. When the lead or pen holder is projected, it is automatically caught and held, usually by a sort of latch.
Note.—Automatic clutch devices are not in this subclass, being separately classified.

21. PEN AND PENCIL CASES, CLUTCH. The lead or crayon is gripped between two or more movable jaws.

Search Class—

- 145—WOOD-WORKING TOOLS, subclass 83, Handles, Socket fastenings.

22. PEN AND PENCIL CASES, CLUTCH, AUTOMATIC. The clutch mechanism is operated automatically after the lead is projected.

23. SCHOLARS' COMPANIONS. Receptacles or combined implements and receptacles especially adapted to contain the pens, pencils, and other implements commonly required by school children.

24. BLOTTERS. Sheets or blocks of absorbent material for removing surplus ink from freshly written matter, holders for blotting material, and devices for supporting blotters in such manner that they may be readily reached when desired for use and be out of the way when not in use.

Search Classes—

- 51—GRINDING AND POLISHING, subclass 1, Abrading materials and tools.

- 101—PRINTING, subclass 107, Press-copying, Damping.

25. BLOTTERS, HAND-ATTACHED. Blotters designed for attachment to the hand of the writer and to be carried along by it as it travels over the surface which is being written upon.

23. BLOTTERS, ROTARY. Blotting material secured to the surface of a rotary cylinder.

27. BLOTTERS, SUPPORTS. Supporting devices for use on desks or writing-tables and designed to hold the blotter out of the way when not in use, but in such position that it will be readily accessible when wanted.

28. COPY-HOLDERS. Devices for holding manuscript in such position that it may be conveniently copied.

29. COPY-HOLDERS, MOVABLE COPY. Copy-holders so constructed that the copy may be moved in such manner as to bring each line of the copy successively into a certain position for copying.

30. COPY-HOLDERS, MOVABLE COPY, ROLLER-FEED. The copy is moved by means of roller mechanism.

31. COPY-HOLDERS, MOVABLE COPY, ROLLER-FEED, POSITIVE-GRIP. The feed-roller is provided with a clamping device for gripping one end of the copy, which is wound on the roller.

32. COPY-HOLDERS, MOVABLE COPY, ROLLER-FEED, STEP-BY-STEP MOVEMENT. The feed-rollers are provided with mechanism, usually involving a pawl and ratchet, for rotating them with a step-by-step movement.

33. COPY-HOLDERS, MOVABLE MARKER. The manuscript to be copied is held stationary and the line that is being copied is indicated by a movable marker which may be moved by the hand of the copyist or by appropriate mechanism.

34. COPY-HOLDERS, MOVABLE MARKER, STEP-BY-STEP MOVEMENT. The copy-holder is provided with mechanism for moving the marker with a step-by-step movement.

35. ENVELOP-OPENERS. Devices of various sorts, specially designed to open envelopes.

36. ERASERS. Devices of various sorts for the removal of ink and pencil lines, together with devices for restoring the surface of the paper after the erasure of the lines.

Search Class—

- 51—GRINDING AND POLISHING, subclass 1, Abrading materials and tools.

37. ERASERS, COMBINATION. Erasing implements in which are combined erasing devices of two or more different kinds.

38. ERASERS, PENCIL ATTACHMENTS. Erasers, usually blocks of rubber, permanently or removably attached to a pencil.

39. ERASERS, KNIFE. Erasers in which the erasing device consists of a sharpened blade.

40. ERASERS, RUBBER. Erasers consisting, essentially, of one or more blocks of rubber with which is usually mixed some finely-pulverized abrading material.

41. ERASING-SHIELDS. Devices to cover and protect the part of a manuscript which is not to be erased and exposing that which is to be erased.

CLASS 120—Continued.

42. **FOUNTAIN-PENS.** Pens provided with an ink reservoir which is usually contained in the penholder and which is so connected with the pen-nib that a flow of ink from the reservoir to the pen may be produced during the operation of writing, thus obviating all need of dipping the pen in ink.

Search Class—

15—BRUSHING AND SCRUBBING, subclass 49, Fountain Brushes, Paint.

43. **FOUNTAIN-PENS, SPECIAL-USE.** Fountain-pens in which the ordinary nib is replaced by a roller, ball, or other ink-applying device to fit the pen for some special purpose.
44. **FOUNTAIN-PENS, STYLOGRAPHIC.** The ordinary split nib is replaced by a slender rod or spindle passing through a hollow cone, the apex of which forms the writing-point.
45. **FOUNTAIN-PENS, STYLOGRAPHIC, SPRING-ACTUATED SPINDLE.** The spindle is connected with a spring which keeps it normally protruded from the tip of the pen.
46. **FOUNTAIN-PENS, FORCE-FEED AND FILLER.** Pens provided with self-contained filling devices or with devices for forcing the ink from the reservoir to the nib. The same mechanism may serve to fill the pen and to control the feed of ink.
47. **FOUNTAIN-PENS, FORCE-FEED AND FILLER, PISTON.** The feed or filler mechanism consists chiefly of a piston which is reciprocated within the barrel of the pen.
48. **FOUNTAIN-PENS, VALVED.** Fountain-pens provided with valves to control the flow of ink to the nib or the ingress of air into the ink reservoir.
49. **FOUNTAIN-PENS, RETRACTILE PEN-SECTION.** Pens so constructed that the "pen-section" can be drawn back into the barrel of the pen when it is not in use.
50. **FOUNTAIN-PENS, FEEDERS.** Devices of various sorts for conveying the ink from the reservoir to the nib and regulating the amount of the flow.
51. **FOUNTAIN-PENS, FEEDERS, MODIFIED-NIB.** Feeding devices involving some modification of the pen-nib.
52. **FOUNTAIN-PENS, FEEDERS, MODIFIED PEN-SECTION.** Feeding devices involving some modification of the ordinary form of "pen-section" or nib-holding member.
53. **HAND AND ARM RESTS.** Devices to support the hand or arm of a person when writing in spaces in which it is difficult to write without special support; also, supports designed to prevent fatigue from writing or to keep the hand out of contact with the paper.
54. **HAND AND ARM RESTS, TRAVELING.** Rests which travel over the paper with the hand or arm of the writer.
55. **HAND AND ARM RESTS, BOOK-SUPPORTED.** Rests designed to be supported by having one end thrust between the pages of a book.
56. **HAND AND ARM RESTS, ADJUSTABLE-HEIGHT.** Rests so constructed that their height may be adjusted as the writer wishes.
57. **INKSTANDS.** Receptacles for ink designed to facilitate the use of ink in writing and not to serve as mere storing vessels. The subclass also includes supports for such ink receptacles and attachments for inkstands that do not fall into other subclasses.
- Search Class—**
91—COATING, subclasses 66, Pots, and 67.1, Mucilage holders.
58. **INKSTANDS, DESK-ATTACHED.** Inkstands of the type usually used in schools and firmly secured to a desk, in the top of which the inkstand is generally embedded.
59. **INKSTANDS, BAROMETER.** Inkstands in which the level of the ink is controlled by atmospheric pressure.
60. **INKSTANDS, FOUNTAIN.** Inkstands provided with a dip-cup which is normally empty, but into which ink may be forced by various means whenever the pen is to be supplied with ink.
61. **INKSTANDS, FOUNTAIN, AUTOMATIC.** Fountain inkstands which act automatically when a pen is inserted into the dip-cup and pressure made upon it.
Note.—This subclass does not include automatic fountain inkstands having a flexible diaphragm, pressure upon which causes the rise of the ink in the dip-cup.
62. **INKSTANDS, FOUNTAIN, COMPRESSIBLE INK-BAG.** Ink is contained in a bag made of pliable material, and pressure upon the bag forces the ink up into the dip-cup.
63. **INKSTANDS, FOUNTAIN, FLEXIBLE-DIAPHRAGM.** A flexible diaphragm forms a part of the wall of the ink reservoir, and pressure upon the diaphragm causes the ink to rise into the dip-cup.
64. **INKSTANDS, FOUNTAIN, FLEXIBLE-DIAPHRAGM, AUTOMATIC.** The flexible diaphragm is connected with the dip-cup in such a way that the pressure of a pen upon the dip-cup causes ink to rise in the cup.

CLASS 120—Continued.

65. **INKSTANDS, GRAVITY-FEED.** Inkstands having a reservoir at a higher level than the dip-cup, so that the ink will flow from reservoir to dip-cup under the influence of gravity whenever the passage between the two is unobstructed.
66. **INKSTANDS, MOVABLE DIP-CUP.** Inkstands each of which is provided with a small movable cup which holds a sufficient quantity of ink to supply a pen and which is supported upon a spring, lever, or other device in such a way that the dip-cup may be readily replenished when empty.
67. **INKSTANDS, SELF-CLOSING.** Inkstands closing automatically when the pen is withdrawn from the ink.
68. **INKSTANDS, SELF OPENING AND CLOSING.** The closure of the inkstand is opened by the pressure of the pen upon the closure or some device connected therewith in the act of dipping the pen.
69. **INKSTANDS, SUPPLEMENTARY-RESERVOIR.** Besides the small receptacle which contains the ink into which the pen is dipped each stand has a larger supplementary reservoir from which the dipping-receptacle may be supplied. There is no special form of apparatus for transferring ink from the large reservoir to the dipping-receptacle.
70. **INKSTANDS, TILTING-RESERVOIR.** The reservoir is in most cases supported upon pivots and is tilted to bring the ink into proper position for dipping the pen. Those stands whose reservoirs are not supported on pivots are set in an inclined position while in use.
71. **INKSTANDS, DIP-GAGES.** Devices for regulating the depth to which the pen enters the ink in the stand; also inkstands provided with such gages.
72. **INKSTANDS, OPENING AND CLOSING DEVICES.** Devices which facilitate the opening and closing of inkstands. They frequently consist of devices connecting the covers of several ink-wells in such a way that the opening of one closes any other that may be open.
73. **INKSTANDS, SUPPORTS.** Devices of various sorts for supporting ink-wells.
- Search Class—**
120—STATIONERY, subclass 58, Ink-stands, Desk-attached, for ink-wells let into a desk-top and of the sort generally used in school-desks.
74. **LETTER-SHEETS AND POSTAL CARDS.** Sheets of paper or cardboard designed for mailing without envelopes. The subclass includes postal cards with reply-cards attached and sheets with attached flaps for concealing the contents of the letter.
75. **MOISTENERS.** Devices for moistening gummed surfaces, such as those of envelopes, stamps, and the like.
- Search Classes—**
15—BRUSHING AND SCRUBBING, sub-class under Fountain-brushes, for moisteners in the form of fountain brushes.
101, PRINTING, subclass 107, Press-copying, Dampening.
216—LABEL PASTING AND PAPER HANGING, subclass 43, Machines, Affixing, Magazine, Stationary, Adhesive applying or moistening, and subclasses thereunder.
76. **MOISTENERS, ROLLER.** A rotating cylinder or sphere, a part of whose surface is always in contact with the water in the moistener, serves to convey the water to the surface which is to be moistened.
77. **ABOLISHED.**
78. **ABOLISHED.**
79. **ABOLISHED.**
80. **ABOLISHED.**
81. **ABOLISHED.**
82. **PAPER-WEIGHTS.** Masses of suitable size and weight, and usually of somewhat ornamental appearance, whose only function is that of holding loose papers in place upon a desk or other support.
83. **PENCILS.** This subclass contains all marking devices consisting of a solid material which produces a mark by leaving a portion of its substance upon the surface over which it is drawn.
- Search Classes—**
106, PLASTIC COMPOSITIONS, subclass 5, Crayons and pencils.
134—LIQUID COATING COMPOSITIONS, subclass 28, Ink and subclasses thereunder.
84. **PENCILS, ATTACHMENTS.** Permanent or removable attachments of various sorts for pencils, excluding mere eraser attachments, which are classified with erasers.
85. **PENCIL-SHARPENERS, IMPLEMENTS, COMPOUND.** Pencil and crayon sharpening implements embodying in each implement two or more different forms of sharpening devices.
86. **PENCIL-SHARPENERS, IMPLEMENTS, COMPOUND, RECIPROCATING - MOVEMENT.** Compound pencil-sharpeners in which the relative movement of pencil and sharpener is reciprocatory in character.

CLASS 120—Continued.

87. PENCIL-SHARPENERS, IMPLEMENTS, POINT-PROTECTORS. Pencil-sharpeners designed to fit over the point of the pencil and protect it when not in use.
88. PENCIL - SHARPENERS, IMPLEMENTS, KNIFE-GAGES. Devices which are slipped over the end of a pencil to gage the cut of a knife-blade when used in sharpening the pencil.
89. PENCIL-SHARPENERS, IMPLEMENTS, RECIPROCATORY-MOVEMENT. The relative movement of pencil and sharpener is reciprocatory in character, and either pencil or sharpener may be moved in the process of sharpening.
90. PENCIL-SHARPENERS, IMPLEMENTS, RECIPROCATORY-MOVEMENT, SHAVING. Reciprocatory pencil-sharpeners in which the sharpening means consists of blades so placed that they will cut shavings from the wood of the pencil instead of grinding the wood away to form the point.
91. PENCIL-SHARPENERS, IMPLEMENTS, REVOLVING-PENCIL. Sharpeners consisting in part of an annular or conical abrading surface over which the pencil is made to travel during the sharpening process.
92. PENCIL-SHARPENERS, IMPLEMENTS, ROTARY-MOVEMENT. The relative movement of pencil and sharpener is rotary in character.
93. PENCIL-SHARPENERS, IMPLEMENTS, ROTARY-MOVEMENT, SHAVING. Rotary sharpeners provided with one or more blades so placed that they remove the wood of the pencil in the form of shavings instead of by abrasion.
94. PENCIL-SHARPENERS, MACHINES. Pencil-sharpeners having a fixed base and other parts movable relatively thereto.
Search Classes—
51—GRINDING AND POLISHING, subclass 3, Glass and stone, Curved surfaces; 4, Metal, Curved surfaces; 5, Wood, Curved surfaces; 144, WOOD WORKING, subclass 30, Special work machines, Single or combined, Pin pointing; 168, FARRIERY, subclass 46, Tools, Calk sharpeners.
95. PENCIL-SHARPENERS, MACHINES, ROTATING CUTTER AND PENCIL. Both cutter and pencil-holder are mechanically rotated during the sharpening process.
96. PENCIL-SHARPENERS, MACHINES, ROTATING CUTTER. Pencil-sharpening machines in which the pencil is turned by hand and a rotating cutter used.
97. PEN-EXTRACTORS. Devices of various kinds designed for extracting pens from penholders.
98. PENHOLDERS. Holders for pens, including some attachments for such holders.
99. PENHOLDERS, MULTIPLE. Penholders for holding several pens simultaneously, including also some yokes for connecting two pens or pencils so that two lines may be made at one stroke.
100. PENHOLDERS, ANGULAR ADJUSTMENT. The staff of the holder and the nib-holder proper are pivotally connected, so that the nib may be set at an angle to the staff of the holder.

CLASS 120—Continued.

101. PENHOLDERS, RELEASING. Penholders so constructed that the grip of the holder on the pen may be released at will.
102. PENHOLDERS, GRIPS. Modifications of penholders and permanent attachments thereto for the purpose of making them conform more readily to the hand or to prevent fatigue from writing.
103. PENHOLDERS, GRIPS, DETACHABLE. Grips which are not permanently attached to the penholders.
104. PENHOLDERS, INK-GUARDS. Attachments for penholders to prevent the inking of the user's fingers in the act of supplying the pen with ink or to prevent overdipping.
105. PENHOLDERS, RULING-GUARDS. Attachments to penholders to prevent inking the ruler when the pen is used for ruling.
106. PENHOLDERS, SLANT DEVICES. Devices for use in writing to give the pen the proper slant.
107. PENHOLDERS, SLANT DEVICES, SUPPORTING. Slant devices which support the pen or the hand of the writer.
108. PEN RACKS AND CLEANERS. Racks and other supporting devices for pens, wipers for pens, and devices which may be used for both supports and cleaners.
Search Classes—
65—KITCHEN AND TABLE ARTICLES, subclass 65, Racks and rests; 131, TOBACCO, subclass 51, Cigar supports and stands.
109. PENS. Points for applying ink to paper in the operations of writing, shading, and ruling, combinations of points and holders, and attachments of various sorts for pens.
110. PENS, RULING. Pens especially designed for ruling, being adapted to make lines of uniform width and to operate when moved in one direction only.
111. PENS, SHADING. Pens designed primarily for producing heavily shaded letters.
112. PENS, STYLUS. Pens used chiefly for marking in large rough letters and resembling a stylus in form.
113. PENS, RESERVOIR ATTACHMENTS. Attachments for pens designed to increase the ink-carrying capacity of the nibs.
114. PENS, RESERVOIR ATTACHMENTS, NIB-ATTACHED. The reservoir attachments are secured directly to the pen-nib instead of to the holder.
115. PENS, RESERVOIR ATTACHMENTS, NIB-ATTACHED, INTEGRAL. The attachments are integral with the pen-nibs.
116. SEALING-WAX APPLIERS. Devices of various sorts to facilitate the application of sealing-wax to packages, etc. The subclass includes sealing-wax packages having applying devices in combination therewith.

CHAPTER I

CHAPTER II

The first chapter of the history of the United States is devoted to the early years of the nation. It begins with the first settlement of the colonies in 1607, and continues to the year 1776, when the United States declared its independence. The chapter is divided into two parts, the first of which deals with the early years of the colonies, and the second with the years leading up to the Revolution. The first part of the chapter is devoted to the early years of the colonies, and the second part to the years leading up to the Revolution. The first part of the chapter is devoted to the early years of the colonies, and the second part to the years leading up to the Revolution.

The second chapter of the history of the United States is devoted to the years leading up to the Revolution. It begins with the year 1776, when the United States declared its independence, and continues to the year 1789, when the Constitution was adopted. The chapter is divided into two parts, the first of which deals with the years leading up to the Revolution, and the second with the years leading up to the Constitution. The first part of the chapter is devoted to the years leading up to the Revolution, and the second part to the years leading up to the Constitution.

CLASS 122.—LIQUID HEATERS AND VAPORIZERS.

DEFINITIONS.

Class.

This class relates to heating liquids, generating vapors from liquids, treating the vapors generated for use, such as superheating or cooling them, and conserving the heat remaining in the liquid or vapor after a part of the heat energy has been made use of for any purpose. To bring a liquid heater into this class, the chamber, receptacle, or conduit in which the liquid is heated must be fluid tight.

The liquid containers classified in this class may be heated either by solid or fluid fuel burned in any type of furnace or burner. The heat may be applied directly to the walls of the fluid containing chamber or indirectly by the interposition of a fluid in a distinct and separate chamber, which fluid being heated may impart its heat to the fluid to be finally heated. When the fluid is heated by the interposition of another fluid the heat generator must be a part of the unitary structure of the fluid heater, with one exception—to wit: devices for generating a vapor having a vapor separator within the fluid chamber may be heated indirectly by a fluid, the furnace for heating which does not form part of the unitary structure. The fluid may be heated also by a heat radiating body in either a liquid, or solid state, which body may be either on the inside or on the outside of the fluid chamber; but if said heating body be inside the fluid chamber its nature must be such that it will not mix with the fluid to be heated. The fluid may also be heated by friction, or by chemical action other than combustion, or by electricity; but mere boilers in combination with a particular electric heater and boilers modified in structure to adapt their contents to be heated by an electric heater are not classified herein, but in the heater class. Neither does this class include solar heaters for heating fluids.

This class includes combinations of steam superheaters, feed-water heaters, steam separators, condensers, traps, manhole-closures, safety devices, cleaners, and feeders with a boiler when the structure claimed necessarily must form a part of the boiler structure combination, also parts of boilers unless they are of general application.

The search notes at the end of the main class definition and the subclass definitions should be consulted as to the classification of patents used in boilers but not included in this class. The exceptions referred to in the search notes are to be considered in defining the limitations of this class.

The words "water" and "steam" as used in these definitions are to be taken in a generic sense as meaning liquid and vapor.

The words "fire tubes" include both small and large tubes through which the products of combustion pass unless the term "flue" is used with them, in which case "fire tubes" would refer to the small tubes, and "flues" to the large tubes for the products of combustion.

The words "water tubes" designate tubes, both large and small, through which liquid or vapor passes.

The words "steam tubes" designate vapor tubes whether the vapor therein be formed from water or any other liquid.

"Boiler" is used as a generic term for a liquid heater. The nature of the liquid heated is immaterial. Whether the liquid heated is conducted from the boiler as liquid or vapor depends upon the amount supplied and the degree of heat attained, and for this reason generally no distinction has been noted in the classification, similar structures being classified together regardless of the ultimate effect. In the type of boilers known as "flashers" this distinction is of importance and provision has been made therefor.

In many cases the kind of fuel used is of importance for classification and examination purposes, and patents have been divided into parallel subclasses on the kind of fuel used, either solid or fluid fuel, and patents have been classified in the fluid fuel subclasses both upon the claims and upon the disclosure.

Patents containing claims covering the boiler and furnace in combination or containing claims to the boiler alone and also claims to the furnace alone are classified in this class (122) and the novelty in furnace structure claimed or disclosed is cross-referenced into appropriate subclasses in class 110, FURNACES.

All patents claiming water-cooled grates as the subject matter of invention are classified in this class (122) whether the connection with a boiler for heating the boiler water is or is not claimed. The reason for this disposition is that most of the patents claiming a water-cooled grate structure also claim the relation and arrangement of the grate with the boiler structure, making it a part of the water heating and steam generating structure of the boiler, and since the water flowing through the grate is necessarily heated the grate becomes a water heater. Those water-cooled grates that are not used in a boiler furnace are classified in the same class with the other water-cooled grates that are used in a boiler furnace, in order that the art may not be separated.

Note.—In class 126, STOVES AND FURNACES, subclass 348, Water heaters, Kettle furnace, Steam generators and cookers, are the steam generators and cookers.

Note.—The distinction between water heaters in classes 122 and 126 is this: The water heaters in class 122 have a closed water containing chamber or receptacle for holding the water while it is heated or have one or more closed conduits through which the water flows while being heated; but the water heaters in class 126 are of the open type. In class 122 are classified mechanism for regulating both the inflow of water to the boiler and the burning of the fuel in all cases when steam is generated and also in all cases when water is heated, excepting in devices for heating water where the opening of a valve to permit water to flow through the heater at the same time increases the heat of the heat generator, such

CLASS 122.—Continued.

devices being classified in class 126, subclass 351, Water heaters, Liquid or gaseous fuel, Automatic; but this subclass relates only to the controlling device for the water and fuel. Claims to the structure of the water heater or boiler together with such a controlling mechanism are classified in class 122, and claims relating to the controlling mechanism will be cross-referenced into class 126, subclass 351.

Note.—Patents relating to the automatic control of the burning of the fuel, either solid or fluid, are not classified in class 122. For such devices see class 110, FURNACES, subclasses 54, Furnace structure, Feeding air and steam, Boiler controlled, and 55, Furnace structure, Feeding air and steam, Time limit; class 153, LIQUID AND GASEOUS FUEL BURNERS, subclass 36, Burners, Liquid fuel, Fuel feeding; class 236, DAMPERS, AUTOMATIC, all subclasses, and class 237, HEAT-DISTRIBUTING SYSTEMS, subclass 23, Brooder and incubator, Water.

The following notes indicate the classification of inventions adapted to be used in connection with boilers and of related inventions. Reference may also be made to the search notes under the various subclasses.

Search Classes—

- 31—DAIRY, subclasses 89, Milk treating; 90, Milk treating Aerating, and 91, Milk treating, Circulation; 126, STOVES AND FURNACES, subclass 272, Liquid sterilizers; 195, ALCOHOL, subclass 5, Beer, Preserving, Pasteurizing, and 210, WATER PURIFICATION, subclass 20, Filters, Liquid sterilizers, for liquid sterilizing by heating liquids by steam or hot water, and 210, WATER PURIFICATION, subclass 20, Filters, Liquid sterilizers, for sterilizing liquids by heating the inflowing cold liquid by the outflowing hot liquid, whether the liquid is heated by a hot fluid, such as steam or hot water, or by a fuel burner.
- 51—GRINDING AND POLISHING, subclasses 4, Metal, Curved surfaces, and 18, File cleaning and reshaping, Sand blast, for structural features of cleaners for tubes and flues.
- 60—MISCELLANEOUS HEAT ENGINE PLANTS, for boilers having mechanism for introducing air or the products of combustion.
- 62—REFRIGERATION, for miscellaneous condensers, cooling radiators, miscellaneous heat transferers, such as feed water heaters, and steam condensers in which steam comes into contact with water, steam superheaters, and feed water heaters heated by furnace gases, but relating to form only.
- 75—METALLURGY, subclasses 110, Cupolas, Water jackets; 116, Furnaces, Blast, Protecting walls; 123, Furnaces, Reverberatory, Water walls and roofs, and 180, Furnaces, Forge, for combinations of boilers and metallurgical furnaces not classified in class 122.
- 83—MILLS, subclasses 64, Steam boiler and flue scrapers, for detached scrapers operated either by hand or power; 90, Steam separators.
- 85—DRIVEN, HEADED, AND SCREW-THREADED FASTENINGS, subclass 15, Bolts, Stay, for boiler stay bolts.
- 103—PUMPS, subclasses 85, Regulators, and the subclasses thereunder, and 106, Trap type, for pump regulators.
- 110—FURNACES, subclass 87, Furnace structure, Firebox, Locomotive.
- 126—STOVES AND FURNACES, subclasses 5, Stoves, Cooking, Combined cooking and heating stove, Steam or water generators, for combination cooking stoves and water heaters and steam generators; 20, Stoves, Cooking, Ovens, Steam or hot water, for steam heated ovens and generators; 33, Stoves, Cooking, Tables, Steam heated, for combination steam generators and steam tables; 31, Stoves, Cooking, Water heating, Flue extension; 34, Stoves, Cooking, Water-backs, 35, Stoves, Cooking, Water-backs, Safety devices, for water-backs and safety devices therefor and water heating tanks; 101, Hot air furnaces, Combined furnace and steam or water, for combination of hot air furnaces with boilers for hot water or steam; 132, Fireplaces, Water-backs, for fireplace water heaters; 271, Heaters, Solar, Water, and 60, MISCELLANEOUS HEAT ENGINE PLANTS, subclass 2, Atmospheric and solar, for solar water heaters and steam generators.
- 126—STOVES AND FURNACES, subclasses 344, Water heaters; 345, Water heaters, Kettle furnace, and the subclasses thereunder, and 350, Water heaters, Liquid or gaseous fuel, and the subclasses thereunder, for domestic water heaters and furnace heated kettles; 361, Water heaters, Stand boilers, for structure of common "kitchen" or "range" stand boilers when they are not heated directly (stand boilers having a direct heater are classified in class 122); 364, Water heaters, Stove-pipe; 365, Water heaters, Stove-pipe, Circulation; the subclasses under Water heaters, Submerged and the subclasses under Water heaters, Vessels, for other types of water heaters not noted above that do not fall under the definitions of class 122.
- 137—WATER DISTRIBUTION, subclasses 70, Mains and pipes, Cleaners; and 100, Mains and pipes, Tubes, for form of boiler tubes and flues; 97, Nozzles, Tube cleaners, for detached cleaning nozzles that do not act as aspirating air pumps; 76, Mains and pipes, Stoppers; 98, Pipe couplings, Pipe and plate, and 99, Leak stoppers, Patches and plugs, for patches for boilers and plugs for boiler tubes; 98, Pipe couplings, Pipe and plate, for unions between boiler tubes or condenser tubes and a tube sheet; 101, Feeders, for valves and gravity feeders having a chamber either stationary or movable, with means for equalizing the pressures between boiler and chamber; 102, Indicators, for pressure and float controlled indicators

CLASS 122—Continued.

and signals formerly in class 122, subclass 11, Indicators, where the novelty resides in the valve; 103, Traps, for steam traps provided with means for discharging water of condensation to the atmosphere. (The body or water chamber may be either stationary or movable and the outlet valve may be operated by a float or weight.)

- 160—STEAM AND VACUUM PUMPS, subclasses 2, Steam loop, for devices for raising water by alternate globules of water and steam and returning it to the boiler or delivering it to an elevated tank; 3, Feeders and traps, for devices for raising water by vacuum and delivering it to the boiler or to a closed receptacle by equalizing pressures between the vacuum pump and receptacle or boiler.
- 162—INJECTORS AND EJECTORS, subclass 2, Injector, Fluid level controlled, for injectors controlled by the level of the water in the boiler.
- 182—SEWERAGE, subclass 2, Cleaning.
- 204—ELECTROCHEMISTRY, subclass 25, Electrolysis, Purifying liquids, Water, for boiler purifiers with electrolytic action.
- 210—WATER PURIFICATION, subclasses 21, Steam heater and filter, for heating feed water or condensing steam in which the filter is claimed; 22, Boiler compounds, and 23, Boiler compound holders, for receptacles for boiler compounds.
- 219—ELECTRIC HEATING AND RHEOSTATS, subclass 38, Heaters, Fluid, and the subclasses thereunder, for water heaters and steam generators particularly adapted to be heated by an electric heater.
- 220—METALLIC SHIPPING AND STORING VESSELS, subclasses 121, Tank attachments, Safety, for safety devices; 124, Tank closures, for manhole covers; 125, Tanks, for boilers that are of general application as closed receptacles; 130, Tanks, Supports and brackets, for boiler supports of general application, and 140, Tanks, Braces, for braces and stays for the inside of boilers, of general application.
- 230—AIR AND GAS PUMPS, subclasses 14, Fluid piston, Injectors, and aspirators, Rotary, for jet condensers; 26, Sand blowers, for cleaning nozzles provided with a sand blast, and 38, Fluid piston, Injectors and aspirators, Tube cleaners, for detached cleaning nozzles that act as an aspirating air pump.
- 236—DAMPERS, AUTOMATIC, for heat regulation generally; subclasses 9, Traps, Thermostatic, and the subclasses thereunder, for thermostatic traps solely operated by an expansible member; 12, Expansion, Liquid level; 13, Expansion, Liquid level, Separate conduit; 14, Expansion, Liquid level, Separate conduit, Pressure operated valve, for thermostatically controlled valves and indicators; 15, Expansion, Liquid level, Trip valve, for safety devices provided with a valve that closes when a certain water level is attained; 16, Fusible, for fusible boiler plugs and valves operated by the fusing of a plug.
- 237—HEAT-DISTRIBUTING SYSTEMS, subclasses 23, Brooder and Incubator, Water, for water heaters for incubators; 24, Traps, for miscellaneous traps for separating water from steam or other gaseous fluid; 25, Traps, Heated, for traps having means for heating them to prevent freezing; 26, Traps, Float valve, Air port; 27, Traps, Float valve, Air port, Thermostatic, for traps provided with a float valve and also a thermostatic valve; 28, Traps, Pressure operated valve, Air port, for traps whose main valve is operated by a pressure motor, the trap also having an air leak port; 29, Traps, Pressure operated valve, Air port, Thermostatic, for traps similar to those in class 237, subclass 25, but also having a thermostatically controlled valve; and 30, Traps, Liquid seal, Air port, for liquid seal traps provided with an air leak port.

Subclasses.

1. PLANTS. Combinations of elements and devices each performing different functions for the conservation of the heat generated in the furnace, the ultimate object of which is the production of steam or the heating of water.

Search Classes—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 445, Regulation, Depending on load; 446, Regulation, Fuel and water, Automatic control, Fluid fuel; 449, Regulation, Fuel and water, Automatic control, Solid fuel; 450, Regulation, Suspended boiler, and 452, Feeders, Boiler pressure; 21, Chemical, for "alkali" steam generators.
- 21—CARRIAGES AND WAGONS, subclass 90, Motor vehicles, for motor vehicle plants where the structure of the vehicle is involved or the general arrangement of the plant on the vehicle.
- 60—MISCELLANEOUS HEAT ENGINE PLANTS, for plants not included in this subclass and the definition of this class, such as plants for the generation of steam mixed with air or the products of combustion.
- 121—STEAM ENGINES, for plants involving the steam engine structure.
- 123—INTERNAL COMBUSTION ENGINES, subclass 2, Combined devices, and the subclasses thereunder, for combinations of internal combustion motors and other engines and steam boilers.
- 237—HEAT DISTRIBUTING SYSTEMS, subclasses 9, Steam, and 15, Water, for plants where the novelty resides in the heating system.

2. PLANTS, GARBAGE. Plants for the destruction of garbage in which the novelty resides either in the arrangement of the boiler or the boiler structure adapted for this special purpose. Note.—For garbage burning boilers search the subclasses covering the structure desired.

Search Classes—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 232, Sectional, Water grate, and 376, Water grate, Progressive feed, for structure of boilers adapted to burn garbage or other waste material.
- 110—FURNACES, subclass 10, Furnace structure, Wet fuel, Garbage and sewage, Steam boiler, for garbage plants with a conventional arrangement of a boiler therewith.

CLASS 122—Continued

3. PLANTS, MOTOR VEHICLE. Boiler plants specially adapted for motor vehicles.

Search Classes—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 445, Regulation, Depending on load; 446, Regulation, Fuel and water, Fluid fuel; 447, Regulation, Fuel and water, Fluid fuel, Cut-off; 448, Regulation, Fuel and water, Automatic control, Fluid fuel; 449, Regulation, Fuel and water, Automatic control, Solid fuel, and 452, Feeders, Boiler pressure, and 158, LIQUID AND GASEOUS FUEL BURNERS, subclass 36, Burners, Liquid fuel, Fuel feeding, for features coming within the definition of these subclasses.
- 21—CARRIAGES AND WAGONS, subclass 90, Motor vehicles, where the structure of the vehicle or the general arrangement of the plant on the vehicle is claimed.

4. MISCELLANEOUS. Miscellaneous boilers and parts thereof not otherwise classifiable.

Note.—For directions as to the classification of boiler parts and accessories now classified elsewhere the search notes under the main class definition should be consulted.

Search Classes—

- 60—MISCELLANEOUS HEAT ENGINE PLANTS, for steam generators where the products of combustion enter the steam generator.
- 219—ELECTRIC HEATING AND RHEOSTATS, for electrically heated boilers.

5. GAS PRODUCER. Combinations of a gas producing furnace and boiler when the structure of the boiler is intimately associated with the producer, so as to form a unitary structure, the gas from the producer being burned to heat the boiler.

Search Classes—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 6, Industrial; 7, Industrial, Waste heat, for boilers heated by gas passing through a boiler from a gas producer but not being burned for heating the boiler, the heat of the hot gas being used for heating the boiler.
- 48—GAS, HEATING AND ILLUMINATING, for gas making plants including a boiler.
- 110—FURNACES, subclass 31, Furnace structure, Gas producer, for gas producer furnaces. (See also notes under the definition of class 110, subclass 31.)
- 158—LIQUID AND GASEOUS FUEL BURNERS, subclass 7, Furnaces, Gas, for gas producers and burners therefor for heating boilers.

6. INDUSTRIAL. Boilers, water heaters, or cooling devices for furnace walls having a closed chamber or conduit combined with a conventional type of furnace employed in a special art. Note.—If the cooling device is not a closed chamber or conduit, it will be classified in the type of furnace of the special art. Class 122 includes such devices known as bosh plates, water cooled walls and roofs, linings, and water cooled tuyers when the cooling device is a closed chamber or conduit and there is otherwise no novelty in the invention.

Search Classes—

- 48—GAS, HEATING AND ILLUMINATING, subclasses 63, Generators, Cupola, Air and steam injected; 64, Generators, Cupola, Air and steam injected, Superheated, and 67, Generators, Cupola, Water jacket.
- 75—METALLURGY, subclasses 110, Cupolas, Water jackets; 116, Furnaces, Blast, Protecting walls; 123, Furnaces, Reverberatory, Water walls and roofs, and 180, Furnaces, Forge, for boilers so intimately connected with the structure of a metallurgical furnace that they belong to the special art of metallurgy.

7. INDUSTRIAL, WASTE HEAT. Combinations of a conventional type of industrial furnace and a boiler located so as to be heated by the waste heat of the furnace.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 20, Subsidiary; 421, Feed heaters, Furnace gases, Offtake flue, and 470, Steam treatment, Horizontal boiler, Superheater, Waste heat flue, for devices covered by these subclass definitions.

8. INDUSTRIAL, WATER-FIREBOX. Industrial furnaces having a water jacket firebox.

9. INDUSTRIAL, WATER-FIREBOX, WATER-TUBE TYPE. Industrial furnaces where the novelty is in the structure of a firebox the walls of which are provided with water containing tubes.

10. FOR FLUID-FUEL BURNER. Boilers for generating steam for feeding a fluid fuel burner.

Search Class—

- 158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 56, Burners, Liquid fuel, Retort, Oil, steam, or water; 57, Burners, Liquid fuel, Retort, Oil, steam, or water, Steam jet, for combinations of steam generator and retort burner; 73, Burners, Liquid fuel, Spray; 74, Burners, Liquid fuel, Spray, Oil, air, and steam; 75, Burners, Liquid fuel, Spray, Oil and steam, for steam generators spray burners; and 92, Burners, Liquid fuel, Fan or tray, Steam or air spray, for steam generator and pan burner.

11. ROTARY. Boilers in which a substantial part or the whole of the fluid-containing chamber is designed to be continuously rotated while heating the water or generating steam.

12. ROTATABLY SUPPORTED. Boilers that are supported in bearings so that the whole boiler or a substantial part thereof may be turned on an axis, generally either vertical or horizontal, after its connecting steam and water pipes have been uncoupled.

CLASS 122—Continued.

13. **STAND-BOILER.** Closed water chambers, tanks, or receptacles usually known in the art as "range" or "stand" boilers, whose structure is modified for the purpose of applying heat directly to the boiler.

Note.—See also the proper structural subclass, for auxiliary heaters for stand boilers in this class. For example, if it be a sectional water heater, that type of heaters; if it be a water tube type of heater, search the type subclass under Water tube boilers. See subclasses 210, Sectional, Fluid fuel, and 250, Water tube, Coil, Vertical, Fluid fuel.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclass 20, Subsidiary, for water heaters, some of which may be connected to heat water for a stand boiler.

126—STOVES AND FURNACES, for combination of cooking or heating stoves, water or steam generators, circulating systems of pipes and stand boilers heated by water-backs, and solar heaters and steam; subclasses 5, Stoves, Cooking, Combined cooking and heating stove, Steam or water generators; 34, Stoves, Cooking, Water-backs; 35, Stoves, Cooking, Water-backs, Safety devices; 350, Water heaters, Liquid or gaseous fuel; 351, Water heaters, Liquid or gaseous fuel, Automatic, for water heaters applicable to stand boilers that are not classified in class 122, LIQUID HEATERS AND VAPORIZERS; 271, Heaters, Solar, Water; 364, Water heaters, Stovepipe; 365, Water heaters, Stovepipe, Circulation; 361, Water heaters, Stand boilers, for ordinary stand boilers not modified for being heated; 362, Water heaters, Stand boilers, Circulation; 366, Water heaters, Submerged, Closed systems pipes, for stand boilers with water heaters and circulation systems; and 363, Water heaters, Stand boilers, Supports, for boiler supports that may have a heating burner.

14. **STAND-BOILER, FLUID FUEL.** Miscellaneous stand boilers heated by fluid fuel.

15. **STAND-BOILER, SOLID FUEL.** Stand boilers having a solid fuel furnace forming a part of the unitary structure of the stand boiler.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 13, Stand boiler, for stand boilers modified to be heated by the waste heat of a solid fuel furnace like that of a cooking stove, but not involving the structure of the stove, such art being classified in class 126, STOVES AND FURNACES.

16. **STAND-BOILER, FIRE-TUBE AND WATER-TUBE, FLUID FUEL.** Stand boilers provided with both fire tubes and water tubes adapted to be heated by a fluid fuel burner.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 15, Stand boilers, Solid fuel, for steam boilers provided with fire tubes and water tubes heated by a solid fuel furnace; 17, Stand boiler, Fire tube, Fluid fuel, for stand boilers provided only with fire tubes and heated by fluid fuel.

17. **STAND-BOILER, FIRE-TUBE, FLUID FUEL.** Stand boilers provided with fire tubes and heated by a fluid fuel burner.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 13, Stand boiler; 15, Stand boiler, Solid fuel, for stand boilers having fire tubes and heated by solid fuel; and 16, Stand boiler, Fire tube and water tube, Fluid fuel, for stand boilers provided with both fire tubes and water tubes and heated by fluid fuel.

18. **STAND-BOILER, WATER-TUBE, BELOW BOILER, FLUID FUEL.** Stand boilers provided with water tubes located below the boiler and heated by a fluid fuel burner.

19. **STAND-BOILER, WATER-TUBE, CASING, FLUID FUEL.** Stand boilers provided with water tubes and surrounded by a casing and heated by a fluid fuel burner.

20. **SUBSIDIARY.** Steam generators or water heaters located either in the firebox, combustion chamber, or offtake flue of a furnace whose main purpose is not for the generation of steam or the heating of water in such boiler.

Note.—These boilers may be of any form consisting of mere pipes or coils, hollow plates, or cylinders with or without fire flues or tubes.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 6, Industrial, and the subclasses thereunder; 10, For fluid fuel burner; 37, Compartment; 38, Compartment, Auxiliary, Draft regulator, and 439, Feed heaters, Stack; 498, Fronts, Doors.

126—STOVES AND FURNACES, subclasses 5, Stoves, Cooking, Combined cooking and heating stove, Steam or water generators; 31, Stoves, Cooking, Water heating, Flue extension; 34, Stoves, Cooking, Water backs; 101, Hot air furnaces, Combined furnace and steam or water; 132, Fireplaces, Water backs; 133, Fireplaces, Water backs, Liquid or gaseous fuel; 364, Water heaters, Stovepipe, and 365, Water heaters, Stovepipe, Circulation, for analogous art not of general application.

21. **CHEMICAL.** Boilers wholly or partly heated by chemical action other than that of the combustion of fuel.

Note.—This subclass includes that type of liquid heater and steam generator known in the art as "alkali" generators for steam.

22. **FLUID AND SOLID FUEL.** Boilers not otherwise classifiable heated by solid or fluid fuel or both combined.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 211, Sectional, Fluid or solid fuel, for sectional boilers heated by solid or fluid fuel.

CLASS 122—Continued.

23. **FLUID FUEL.** Boilers not otherwise classifiable that are heated by fluid fuel.

Note.—The following is a complete list of the subclasses disclosing boilers heated by fluid fuel classified in class 122:

10. For fluid-fuel burner.			
Stand-boiler—			
14. Fluid fuel,	236.	Water-tube—	
Fire-tube and water-	243.	Fluid fuel,	
tube—		Capillary—	
16. Fluid fuel,		Fluid fuel,	
Fire-tube—	245.	Coil or loop—	
17. Fluid fuel,		Central standpipe—	
Water-tube—		Fluid fuel,	
Below boiler—		Coil—	
18. Fluid fuel,	248.	Horizontal—	
Casing—		Fluid fuel,	
19. Fluid fuel.	250.	Vertical—	
23. Fluid fuel—		Fluid fuel,	
24. Explosion,	274.	Longitudinal upper	
Plural burner—		drum—	
Superimposed.		Fluid fuel,	
Flasher—		Loop—	
41. Fluid fuel.	283.	Over firebox—	
Fire and water tube—		Vertical—	
43. Fluid fuel.		Fluid fuel,	
Fire-tube—	308.	Spur—	
45. Fluid fuel,		Central standpipe—	
Vertical—	319.	Fluid fuel,	
115. Fluid fuel.		Vertical—	
Flue—	322.	Fluid fuel,	
Vertical—		Stand pipe—	
Fluid fuel,		Fluid fuel,	
Concentric shell—		Straddle—	
161. Fluid fuel,		Single upper drum—	
Internal water tube—	328.	Plural lower drum—	
Fluid fuel,		Fluid fuel,	
167. Transverse—		Vertical—	
Fluid fuel,	333.	Fluid fuel,	
Vertical aligned fire	348.	Internal fire tube—	
tube—		Fluid fuel,	
179. Fluid fuel,	356.	Zigzag—	
Spiral water conduit—		Fluid fuel,	
183. Fluid fuel.		Regulation—	
Plate—	446.	Fuel and water—	
Zigzag conduit—	447.	Fluid fuel—	
Fluid fuel.		Cut-off,	
208. Sectional—	448.	Automatic control—	
Fluid fuel,		Fluid fuel,	
210. Fluid or solid fuel,	502.	Fluid displacer—	
Horizontal sections—		Fluid fuel.	
Superimposed—			
Central connection—			
216. Fluid fuel.			

24. **FLUID FUEL, EXPLOSION.** Boilers heated by fluid fuel whose combustion is intermittent and explosive.

Search Classes—

60—MISCELLANEOUS HEAT ENGINE PLANTS, subclasses 30, Pressure generators, Steam, Combustion products injected, Explosion, and 37, Pressure generators, Air, Combustion products injected, Explosion, if the products of combustion enter the fluid chamber.

123—INTERNAL COMBUSTION ENGINES, subclass 6, Combined devices, Internal combustion and fluid pressure, Waste heat utilizing.

25. **FLUID FUEL, PLURAL BURNER, SUPERIMPOSED.** Boilers provided with a plurality of fluid fuel burners one above the other.

26. **FRICTION GENERATOR.** Boilers heated by friction.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 380, Cleaning, Agitating circulator, and 411, Circulation, Mechanical, Internal.

126—STOVES AND FURNACES, subclass 247, Heaters, Frictional, for frictional air heaters.

27. **NON-COMBUSTIBLE HEATER, SURFACE.** Boilers heated by a non-combustible hot material, such as slag, bars or pigs of iron, or brick that does not come into contact with the liquid to be heated.

28. **NON-COMBUSTIBLE HEATER, WATER IN CONTACT.** Boilers heated by a non-combustible hot material, either introduced into the water or having the water fed upon the hot material.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 31, Indirectly heated, Separate fluid, Injected.

29. **ANNULAR FIREBOX.** Miscellaneous boilers not otherwise classifiable which have an annular firebox.

Note.—The following is a complete list of subclasses disclosing boilers with an annular firebox:

Water-tube—		Water-tube—	
Coil or loop—		Spur—	
Central standpipe—		Stand-pipe—	
246. Annular firebox,	323.	Annular firebox.	
Spur—		Vertical—	
Central standpipe—	335.	Annular firebox.	
309. Annular firebox,			

CLASS 122—Continued.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 127, Fire tube, Vertical, Water firebox, Annular, for vertical fire tube boilers having an annular firebox; 184, Flue, Vertical, Stand pipe, Water tube, Annular firebox, for vertical flue boilers with annular fireboxes.

30. MAGAZINE. Boilers having fuel magazines and not otherwise classifiable.

Note.—The following is a complete list of subclasses of boilers having fuel magazines:

5. Gas producer.

Fire-tube—

46. Magazine,
Horizontal—
Drop water firebox—
66. Watercoking chamber,
Water firebox—
92. Magazine,
Vertical—
117. — Central magazine,
124. — Side magazine,
Water firebox—
128. — Central magazine.

Flue—

136. Horizontal,
Vertical—
157. Central magazine—
158. Water jacket,
Concentric shell—
162. Central magazine,
Internal water tube—
168. Central magazine.

Sectional—

212. Magazine,
Horizontal sections—
Superimposed—
Water firebox—
219. Central magazine.

Sectional—

- Vertical sections—
Annularly posited—
222. Central magazine.

Water-tube—

237. Magazine,
Coil—
Vertical—
251. Central magazine,
Internal fire tube—
Vertical—
272. Central magazine,
Spur—
Central stand pipe—
310. Central magazine,
Vertical—
320. Central magazine,
Vertical—
334. Side magazine,
Annular lower drum—
Annular upper drum—
339. Central magazine,
Upper drum—
344. Central magazine.

Water-grate—

373. Cage.

31. INDIRECTLY HEATED, SEPARATE FLUID, INJECTED. Boilers in which the fluid to be heated is heated by the injection of a hot liquid of such a nature that it will not mix with the fluid to be heated.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 28, Non-combustible heater, Water in contact, for analogous devices.

32. INDIRECTLY HEATED, SEPARATE FLUID, SURFACE. Liquid and vapor generators having two separate compartments not in communication, the liquid to be vaporized being in one compartment and heated by a hot fluid in the other compartment.

Note.—Slag heated boilers, where the slag heats a fluid like air or water, which in turn imparts its heat to the water in the steam making chamber and water evaporating apparatus, indirectly heated, provided the structure of such apparatus must act as a vapor or steam generator, are classified in this and its subsidiary subclasses. Even sugar evaporators and vacuum pans are classified here if the structure is such as to be of general application as a steam generator and the discharge outlet for the syrup is only of such a character as to be equally adapted for a blow-off conduit for sludge in a steam generator.

Note.—Devices for the transference of heat from one fluid to another, unless they are necessarily steam generators, are not classified in class 122.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclass 483, Steam treatment, Superheater, Indirectly heated, for superheaters indirectly heated.

31—DAIRY, subclasses 89, Milk treating; 90, Milk treating, Aerating, and 91, Milk treating, Circulation, and 210, WATER PURIFICATION, subclass 20, Filters, Liquid sterilizers, for liquid heaters heated indirectly.

62—REFRIGERATION, subclasses 24, Condensers, for condensers provided with evaporators for water, the vapor being condensed in order to obtain pure water for boilers or drinking purposes, such as salt water evaporators for ships, combined with a steam engine condenser; 29, Heat transferers and conservers, and 30, Heat transferers and conservers, Surface, for water heaters indirectly heated by steam.

33. INDIRECTLY HEATED, SEPARATE FLUID, SURFACE, FURNACE. Boilers having two separate compartments not in communication with each other, each adapted to contain a fluid, and provided with a furnace forming a part of a unitary structure, that heats the fluid in one compartment, which in turn imparts its heat to the fluid in the other compartment.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 483, Steam treatment, Superheater, Indirectly heated, for superheaters indirectly heated.

34. INDIRECTLY HEATED, SEPARATE FLUID, SURFACE, SEPARATOR. Liquid and vapor generators of the character defined in subclass 32, Indirectly heated, Separate fluid, Surface, but having an internal vapor or steam separator claimed.

Note.—The same remarks apply to this subclass as to subclass 32, above mentioned, and the search notes for that subclass are applicable here.

CLASS 122—Continued.

35. ACCUMULATOR. Boilers provided with one or more chambers in which the hot boiler water or steam may be stored when less than the normal amount of steam is being used, which may serve as a storage reservoir for heat energy under abnormal demands for steam.

Note.—This type of accumulator has no relation to the type of accumulator for exhaust steam and water of condensation which is classified at present in class 121, STEAM ENGINES, subclass 95, Exhaust-regenerated.

36. AUXILIARY STEAM-HEATER. Boilers having means for passing exhaust steam through conduits within the boiler or in surface contact therewith or for passing live steam generated in the same boiler or in another boiler into the water in the boiler. This subclass includes processes for getting up steam by the injection of live steam from one boiler into another boiler.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 27, Non-combustible heater, Surface, and 28, Non-combustible heater, Water in contact, for boilers heated by slag or hot brick or bars of iron; 31, Indirectly heated, Separate fluid, Injected, for boilers heated by the injection of a liquid of a kind that does not mix with the water in the boiler; 32, Indirectly heated, Separate fluid, Surface, and the subclasses thereunder, for boilers heated indirectly by another hot fluid; 407, Circulation, Injector, for closely allied functions; 453, Feeders, Exhaust steam, and the subclasses thereunder, for devices for returning exhaust steam to the boiler; 463, Steam treatment, Fire tube boiler, Horizontal, Superheater, Interior steam space, Internal fire tube, and 509, Submerged steam chamber for analogous art.

37. COMPARTMENT. Boilers having separate water chambers, which may or may not be in communication with each other at the top of the boiler.

Note.—These boilers are designed to be used either as steam boilers for generating steam at different pressures or for generating steam and also for heating water when it is desired to have steam for one purpose and water heating for other purposes, as, for instance, using the steam for one set of radiators and the water for another set, or for generating steam or hot water for the radiators on one floor of a building and for generating steam or hot water for radiators on another floor, with separate circuits to each compartment.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 20, Subsidiary, for boilers provided with auxiliary water heaters, where the water is heated or steam generated for separate use; 33, Indirectly heated, Separate fluid, Surface, Furnace, for boilers having separate compartments, where the water is heated or steam generated indirectly by heat from water or steam heated in another compartment of the boiler by a furnace; 83, Fire tube, Horizontal, Transverse diaphragm, and 123, Fire tube, Vertical, Separate compartment, for boilers with separate compartments, where the water is fed progressively from one compartment to the next one; 125, Fire tube, Vertical, Top water chamber; 420, Feed heaters, Furnace gases; 421, Feed heaters, Furnace gases, Offtake flue, and 439, Feed heaters, Stack, for water heaters heated by furnace gases.

38. COMPARTMENT, AUXILIARY, DRAFT REGULATOR. Boilers having a separate compartment for heating water designed and adapted to operate a motor for regulating the combustion of the boiler furnace.

39. FILM. Boilers in which the liquid flows over the heating surface of the boiler in a thin stream and occupies only a limited portion of the boiler space.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 218, Sectional, Horizontal sections, Superimposed, Water fire box; 242, Water tube, Capillary, and 243, Water tube, Capillary, Fluid fuel, for capillary tubes; 258, Water tube, Downflow, for allied art; 501, Fluid displacer, and 502, Fluid displacer, Fluid fuel, for displacing elements in tubes causing the liquid to spread in a thin film.

126—STOVES AND FURNACES, subclass 359, Water heaters, Liquid or gaseous fuel, Overflow.

40. FLASHER. Boilers in which liquid is flashed into vapor as soon as it enters the vapor generating chamber. The liquid may be preheated in a chamber forming part of the unitary boiler structure or preheated in a chamber separate from the main vapor generator.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, the proper structural subclasses, for boilers consisting of conduits or coils to which liquid is fed and its temperature progressively raised in its passage through the boiler, even though it be discharged as superheated steam, which is not the true flasher; subclasses 39, Film; 242, Water tube, Capillary, 342, Water tube, Capillary, Fluid fuel, and 260, Water tube, Flat, for progressive heaters; 247, Water tube, Coil, 248, Water tube, Coil, Horizontal, Fluid fuel, 249, Water tube, Coil, Vertical, and 250, Water tube, Coil, Vertical, Fluid fuel, for progressively heated steam generators; 445, Regulation, Depending on load, 446, Regulation, Fuel and water, Fluid fuel, 448, Regulation, Fuel and water, Automatic control, Fluid fuel, 449, Regulation, Fuel and water, Automatic control, Solid fuel, and 452, Feeders, Boiler pressure, for regulating devices for flashers and progressively heated steam generators.

60—MISCELLANEOUS HEAT ENGINE PLANTS, subclass 33, Pressure generators, Steam, Combustion products injected, Flasher type.

CLASS 122—Continued.

- 126—STOVES AND FURNACES, subclass 359, Water heaters, Liquid or gaseous fuel, Overflow.
- 219—ELECTRIC HEATING AND RHEOSTATS, For electrically heated flash boilers.

41. FLASHER, FLUID FUEL. Flash boilers heated by fluid fuel.

Search Classes—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 39, Film; 248, Water tube, Coil, Horizontal, Fluid fuel, and 250, Water tube, Coil, Vertical, Fluid fuel, for progressively heated fluid by a fluid fuel burner; 445, Regulation, Depending on load, 446, Regulation, Fuel and water, Fluid fuel, 448, Regulation, Fuel and water, Automatic control, Fluid fuel, and 452, Feeders, Boiler pressure, and 103, PUMPS, subclass 85, Regulators, and the subclasses thereunder, for regulation of boilers.
- 60—MISCELLANEOUS HEAT ENGINE PLANTS, subclass 33, Pressure generators, Steam, Combustion products injected, Flasher type, for products of combustion mingled with the steam.
- 126—STOVES AND FURNACES, subclass 359, Water heaters, Liquid or gaseous fuel, Overflow.

42. FIRE AND WATER TUBE. Miscellaneous boilers provided with both water tubes and fire tubes not otherwise provided for.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 53, Fire tube, Horizontal, Plural, Water tube, the subclasses under Fire tube, Horizontal, Water tube, 68, Fire tube, Horizontal, Drop water fire box, Water tube, and the subclasses thereunder, and 98, Fire tube, Horizontal, Water fire box, Water grate, Updraft, for horizontal fire tube boilers with water tubes; 113, Fire tube, Transverse, Water tube, for analogous art; 130, Fire tube, Vertical, Water tube, and the subclasses thereunder, for vertical fire tube boilers provided with water tubes; 138, Flue, Horizontal, Plural, Water tube, 140, Flue, Horizontal, Internal water tube, and the subclasses thereunder; 149, Flue, Horizontal, Return fire tube, 150, Flue, Horizontal, Return fire tube, Rear water tube, and 152, Flue, Horizontal, Water grate in flue, for horizontal flue boilers with water tubes; 153, Flue, Horizontal, Water tube, and 154, Flue, Horizontal, Water tube, Over bridge wall; 166, Flue, Vertical, Internal water tube, and the subclasses thereunder, for vertical flue boilers provided with water tubes; 195, Horizontal cylinder, Water tube, and the subclasses thereunder, for horizontal cylindrical boilers with water tubes.

43. FIRE AND WATER TUBE, FLUID FUEL. Miscellaneous combined water tube and fire tube boilers heated by fluid fuel not falling within the definition of other subclasses.

44. FIRE-TUBE. Miscellaneous fire tube boilers not within the definition of other subclasses.

Note.—Horizontal cylindrical boilers having water heating structures consisting of water tubes, drums, water walls, and water chambers of various forms, claimed in combination with the boiler or being of such a configuration as to adapt it for use with a horizontal cylindrical boiler, are classified in class 122, subclasses 191-207, inclusive, under Horizontal cylinder, although fire tubes may be made an element of the claim, provided the novelty of the invention is not dependent upon the boiler's being provided with fire tubes.

Note.—The term "fire tube" is used in a sense broad enough to include both small tubes and large tubes forming passages through a chamber when the size of the tubes is immaterial to the invention claimed; but patents disclosing boilers provided with large fire tubes or "flues," where the large size of the tubes is a material feature of the structure and is necessary to the structure of the boiler and its combination with other features, are classified under the "flue" types of boilers, subclass 135, Flue, and the subclasses thereunder, except in that type of boiler where the large fire tube or flue is a subsidiary feature of the boiler, which is manifestly of the small fire tube type, in which case it is classified under the fire tube subclasses. See, for example, class 122, subclasses 47, Fire tube, Flue, Horizontal; 48, Fire tube, Flue, Vertical; 50, Fire tube, Horizontal or inclined, Water firebox, Flue, and 78, Fire tube, Horizontal, Return fire tube, Water firebox, Flue.

Note.—When a large flue in a boiler is essential to the structure and is not a mere subsidiary feature, such patents are classified in the "flue" type of boiler, although small fire tubes are an essential part of the combination, except those types classified in class 122, subclasses 47, Fire tube, Flue, Horizontal, and 48, Fire tube, Flue, Vertical.

Note.—Miscellaneous combinations of fire tube and water tube boilers are classified in class 122, subclasses 42, Fire and water tube, and 43, Fire and water tube, Fluid fuel, but only those that are not specially provided for in the combination fire tube and water tube subclasses under the fire tube or the flue type.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclass 37, Compartment, for boilers having separate compartments having fire tubes.

45. FIRE-TUBE, FLUID FUEL. Miscellaneous fire tube boilers heated by fluid fuel not covered by the definitions of other subclasses under the fire tube group.

Note.—The following is a list of subclasses containing fire tube or flue boilers heated by fluid fuel:

Fire tube—	Flue—
Vertical—	Vertical—
115. Fluid fuel.	167. Internal water tube—
Flue—	Fluid fuel.
Vertical—	Vertical aligned fire
156. Fluid fuel.	tube—
Concentric shell—	179. Fluid fuel.
161. Fluid fuel.	Spiral water conduit—
	183. Fluid fuel.

CLASS 122—Continued.

46. FIRE-TUBE, MAGAZINE. Miscellaneous fire tube boilers having a fuel magazine not coming within the definition of other fire tube magazine boilers.

Note.—The following is a list of all subclasses having fire tube boilers with magazines:

Fire-tube—

Horizontal—

92. Water firebox—

Magazine,

Vertical—

124. Side magazine,

Water firebox—

128. Central magazine.

Note.—The following is a list of all subclasses of flue boilers with magazines:

Flue—

Vertical—

157. Central magazine,

Concentric shell—

162. Central magazine,

Internal water tube—

168. Central magazine.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 212, Sectional, Magazine; 219, Sectional, Horizontal sections, Superimposed, Water firebox, Central magazine, and 222, Sectional, Vertical sections, Annularly posited, Central magazine, for sectional boilers with fuel magazines.

47. FIRE-TUBE, FLUE, HORIZONTAL. Miscellaneous fire tube boilers having a large horizontal flue, not covered by the definitions of other subclasses.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 50, Fire tube, Horizontal or inclined, Water firebox, Flue, and 78, Fire tube, Horizontal, Return fire tube, Water firebox, Flue, for analogous art; 136, Flue, Horizontal, for horizontal flue boilers with transverse fire tubes; 149, Flue, Horizontal, Return fire tube, for horizontal flue boilers with return fire tubes within the same part of the boiler as the flue.

48. FIRE-TUBE, FLUE, VERTICAL. Miscellaneous fire tube boilers having a large vertical flue not covered by the definitions of other subclasses.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclass 49, Fire tube, Horizontal and vertical, for fire tube boilers of a miscellaneous type with vertical fire tubes.

49. FIRE-TUBE, HORIZONTAL AND VERTICAL. Miscellaneous fire tube boilers having both horizontal and vertical fire tubes.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 85, Fire tube, Horizontal, Two diameters, Small diameter over firebox, and 191, Horizontal cylinder, Subjacent fire tube, Beyond bridge wall.

50. FIRE-TUBE, HORIZONTAL OR INCLINED, WATER-FIREBOX, FLUE. Fire tube boilers that are horizontal or somewhat inclined from the horizontal, having fire tubes that communicate with a large flue within the boiler, that may serve as a firebox.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 78, Fire tube, Horizontal, Return fire tube, Water firebox, Flue, 80, Fire tube, Horizontal, Subjacent fire tube, 95, Fire tube, Horizontal, Water firebox, Plural, Common combustion chamber, and 149, Flue, Horizontal, Return fire tube, for special features; 109, Fire tube, Inclined, for inclined fire tube boilers.

51. FIRE-TUBE, HORIZONTAL. Miscellaneous horizontal fire tube boilers not covered by other subclasses.

Note.—See subclass 44, Fire tube, notes, for distinction between fire tube and flue boilers.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, the minor subclasses under the horizontal fire tube boilers, for various structures combined with a horizontal fire tube boiler; subclasses 47, Fire tube, Flue, Horizontal, for fire tube boilers with a large horizontal flue; 49, Fire tube, Horizontal and vertical, for horizontal fire tube boilers having vertical fire tubes; 113, Fire tube, Transverse, Water tube, for horizontal boilers with transverse fire tubes; 136, Flue, Horizontal, and the subclasses thereunder, for combinations of horizontal large flue boilers with fire tubes, both horizontal and vertical.

52. FIRE-TUBE, HORIZONTAL, PLURAL. Miscellaneous liquid heaters having two or more horizontal fire tube boilers arranged side by side or superposed.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 82, Fire tube, Horizontal, Superjacent feed heater, In communication; 137, Flue, Horizontal, Plural, for horizontal flue boilers with the same arrangement.

53. FIRE-TUBE, HORIZONTAL, PLURAL, WATER-TUBE. Plural, horizontal fire tube boilers in combination with water tubes with various arrangement.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclass 138, Flue, Horizontal, Plural, Water tube, for horizontal flue boilers with water tubes.

54. FIRE-TUBE, HORIZONTAL, CENTRAL FIREBOX, DOUBLE OUTLET. Horizontal fire tube boilers with a firebox located midway its ends, having outlets for the products of combustion opposite each other.

CLASS 122—Continued.

55. FIRE-TUBE, HORIZONTAL, CYLINDER. The structure of single cylindrical horizontal fire tube boilers.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, the horizontal cylindrical boilers generally, and the horizontal fire tube boilers for special features; and especially subclass 75, Fire tube, Horizontal, Return fire tube.

56. FIRE-TUBE, HORIZONTAL, DEPENDING FIRE-TUBE, REAR OF BRIDGE-WALL. Horizontal fire tube boilers having a separate and distinct boiler section provided with fire tubes, located beneath the boiler, at the rear of the bridge wall.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 81, Fire tube, Horizontal, Subjacent transverse fire tube; 85, Fire tube, Horizontal, Two diameters, Small diameter over firebox; 86, Fire tube, Horizontal, Two diameters, Small diameter over firebox, Water firebox; 110, Fire tube, Transverse, Horizontal boiler, and 191, Horizontal cylinder, Subjacent fire tube, Beyond bridge wall, for closely allied art.

57. FIRE-TUBE, HORIZONTAL, DOUBLE WATER-FIRE-BOX, ALTERNATE SMOKE RETURN. Horizontal fire tube boilers having a two-part water firebox or the equivalent thereof, with mechanism for passing the products of combustion from one part of the firebox to the other part, in order that the smoke may be consumed.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclass 60, Fire tube, Horizontal, Drop water firebox, Double, Alternate smoke return, for similar functions with a different structure.

110—FURNACES, subclasses 26, Furnace structure, Double firebox, Alternate smoke return, Over fire, and 27, Furnace structure, Double firebox, Alternate smoke return, Under fire.

58. FIRE-TUBE, HORIZONTAL, DROP WATER-FIREBOX. Miscellaneous horizontal fire tube boilers having a water firebox united to and extending below the main body of the boiler.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 73, Fire tube, Horizontal, Projecting into firebox, Drop water firebox; 74, Fire tube, Horizontal, Return and reverse, Drop water firebox; 76, Fire tube, Horizontal, Return fire tube, Drop water firebox, and 77, Fire tube, Horizontal, Return fire tube, Drop water firebox, Internal water tube, for return fire tube horizontal fire tube boilers with drop water fireboxes; 107, Fire tube, Horizontal, Water wall, Drop water firebox, for horizontal fire tube boilers with water walls having a drop water firebox; 139, Flue, Horizontal, Drop water firebox; 141, Flue, Horizontal, Internal water tube, Longitudinal, Drop water firebox, and 146, Flue, Horizontal, Internal water tube, Transverse, Drop water firebox, for horizontal large flue boilers with drop water fireboxes.

59. FIRE-TUBE, HORIZONTAL, DROP WATER-FIREBOX, CIRCULATION CONDUIT. Horizontal fire tube boilers having a drop water firebox with a conduit located either inside or outside the boiler to connect the water firebox with the opposite end of the boiler to help the circulation of the water.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 91, Fire tube, Horizontal, Water firebox, Firebox water heater, Trapped circuit, when this conduit is provided with a sediment trap and water heating tubes.

60. FIRE-TUBE, HORIZONTAL, DROP WATER-FIREBOX, DOUBLE, ALTERNATE SMOKE RETURN. Horizontal fire tube boilers having a drop water firebox made with two compartments, with means for alternately passing the products of combustion from one compartment to the other.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 57, Fire tube, Horizontal, Double water firebox, Alternate smoke return, for water fireboxes with alternate smoke return features; 95, Fire tube, Horizontal, Water firebox, Plural, Common combustion chamber, for plural fireboxes.

110—FURNACES, subclasses 26, Furnace structure, Double firebox, Alternate smoke return, Over fire, and 27, Furnace structure, Double firebox, Alternate smoke return, Under fire, for similar functions in the furnace art.

61. FIRE-TUBE, HORIZONTAL, DROP WATER-FIREBOX, DROP WATER-BAFFLE. Horizontal fire tube boilers having a drop water firebox, with a water baffle depending from the top of the firebox, formed either by walls spaced apart or water tubes, or water tubes combined with fire brick, or water walls.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclass 188, Horizontal cylinder, Drop water baffle, and 110, FURNACES, subclasses 65, Furnace structure, Feeding air and steam, Firebox, Drop arch, and 93, Furnace structure, Firebox, Drop arch, for similar art.

62. FIRE-TUBE, HORIZONTAL, DROP WATER-FIREBOX, FRONT AND REAR WATER-BAFFLE. Horizontal fire tube boilers having a drop water firebox with both front and rear water baffles for the products of combustion.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclass 71, Fire tube, Horizontal, Drop water firebox, Water tube, Solid baffle, for rear baffles having water tubes on which rests brickwork.

110—FURNACES, subclasses 66, Furnace structure, Feeding air and steam, Firebox, Door and bridgeway arch, and 94, Furnace structure, Firebox, Door and bridgeway arch, for similar functions in the combustion art; 61, Furnace structure, Feeding air and steam, Firebox, Locomotive, and 76, Furnace structure, Feeding air, Firebox, Locomotive, for allied art.

CLASS 122—Continued.

63. FIRE-TUBE, HORIZONTAL, DROP WATER-FIREBOX, FRONT WATER-BAFFLE. Horizontal fire tube boilers having a drop water firebox, with a water baffle in the front of the firebox.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclass 62, Fire tube, Horizontal, Drop water firebox, Front and rear water baffle, and 110, FURNACES, subclasses 66, Furnace structure, Feeding air and steam, Firebox, Door and bridgeway arch; 67, Furnace structure, Feeding air and steam, Firebox, Door arch, and 76, Furnace structure, Feeding air, Firebox, Locomotive, for similar art.

64. FIRE-TUBE, HORIZONTAL, DROP WATER-FIREBOX, INTERPOSED COMBUSTION CHAMBER. Horizontal fire tube boilers having a drop water firebox, with a separate combustion chamber between the firebox and the fire tubes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 95, Fire tube, Horizontal, Water firebox, Plural, Common combustion chamber, and 100, Fire tube, Horizontal, Water firebox, Water tube type, Interposed flue, for other types of boilers with an interposed combustion chamber between the firebox and the fire tubes.

65. FIRE-TUBE, HORIZONTAL, DROP WATER-FIREBOX, REAR WATER-BAFFLE. Horizontal fire tube boilers, having a drop water firebox, with a water baffle in the rear of the firebox.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclass 62, Fire tube, Horizontal, Drop water firebox, Front and rear water baffle, and 110, FURNACES, subclasses 68, Furnace structure, Feeding air and steam, Firebox, Bridgeway arch; 76, Furnace structure, Feeding air, Firebox, Locomotive, and 96, Furnace structure, Firebox, Bridgeway arch, for similar art.

122—LIQUID HEATERS AND VAPORIZERS, subclass 71, Fire tube, Horizontal, Drop water firebox, Water tubes, Solid baffle, for solid baffles, supported by water tubes.

66. FIRE-TUBE, HORIZONTAL, DROP WATER-FIREBOX, WATER COKING CHAMBER. Horizontal fire tube boilers having a drop water firebox containing a water-cooled coking chamber for fuel.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclass 67, Fire tube, Horizontal, Drop water firebox, Water grate, Intermediate draft, and 110, FURNACES, subclasses 24, Furnace structure, Coking, and 25, Furnace structure, Coking, Gas passing under grate, for similar art.

122—LIQUID HEATERS AND VAPORIZERS, subclass 92, Fire tube, Horizontal, Water firebox, Magazine, for magazines.

67. FIRE-TUBE, HORIZONTAL, DROP WATER-FIREBOX, WATER-GRATE, INTERMEDIATE-DRAFT. Horizontal fire tube boilers having a drop water firebox with a plurality of fuel chambers, one of which at least has a water grate, the products of combustion from the fuel chambers meeting each other. The fuel chambers are generally superposed.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 66, Fire tube, Horizontal, Drop water firebox, Water coking chamber, for boilers of this type when the upper fuel chamber is a coking chamber; 371, Water grate, and the subclasses thereunder, for grate structure.

68. FIRE-TUBE, HORIZONTAL, DROP WATER-FIREBOX, WATER-TUBE. Horizontal fire tube boilers having a drop water firebox, with some form of water tubes in the firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 69, Fire tube, Horizontal, Drop water firebox, Water tube, Feed heater, Check valve; 70, Fire tube, Horizontal, Drop water firebox, Water tube, Feeding air; 71, Fire tube, Horizontal, Drop water firebox, Water tube, Solid baffle; 91, Fire tube, Horizontal, Water firebox, Firebox water heater, Trapped circuit, and 99, Fire tube, Horizontal, Water firebox, Water tube, Straddle, for various types of water tubes in the firebox.

69. FIRE-TUBE, HORIZONTAL, DROP WATER-FIREBOX, WATER-TUBE, FEED-HEATER, CHECK-VALVED. Horizontal fire tube boilers having a drop water firebox provided with a heating chamber, tubes or conduits in the firebox, with the combination of one or more check valves so arranged that water from the boiler circulates through the heater until feed water is being fed to the heater, when the boiler circulation is cut off.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 118, Fire tube, Vertical, Circulation tube, Internal, for similar art; 196, Horizontal cylinder, Water tube, Feed heater, Check valve, for check valve feed heaters for horizontal cylindrical boilers.

70. FIRE-TUBE, HORIZONTAL, DROP WATER-FIREBOX, WATER-TUBE, FEEDING AIR. Horizontal fire tube, boilers having a drop water firebox, with water tubes in the firebox, combined with air feeding conduits.

71. FIRE-TUBE, HORIZONTAL, DROP WATER-FIREBOX, WATER-TUBE, SOLID BAFFLE. Horizontal fire tube boilers having a drop water firebox with water tubes therein, with solid baffle brick combined with them.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 61, Fire tube, Horizontal, Drop water firebox, Drop water baffle; 65, Fire tube, Horizontal, Drop water firebox, Rear water baffle; 68, Fire tube, Horizontal, Drop water firebox, Water tube; and

CLASS 122—Continued.

- 69, Fire tube, Horizontal, Drop water firebox, Water tube, Feed heater, Check valved, and 110, FURNACES, subclasses 61, Furnace structure, Feeding air and steam, Firebox, Locomotive, and 76, Furnace structure, Feeding air, Firebox, Locomotive, for similar art disclosed.
72. FIRE-TUBE, HORIZONTAL, PROJECTING INTO FIRE-BOX. Horizontal fire tube boilers having the end of the boiler projecting into the firebox or overhanging the fire grate.
73. FIRE-TUBE, HORIZONTAL, PROJECTING INTO FIRE-BOX, DROP WATER-FIREBOX. Boilers having horizontal fire-tubes projecting into a drop water firebox.
74. FIRE-TUBE, HORIZONTAL, RETURN AND REVERSE, DROP WATER-FIREBOX. Horizontal fire tube boilers having a drop water firebox so arranged that the products of combustion pass a plurality of times through the boiler or underneath, through or over the boiler, and are discharged at the outlet flue located at the end of the boiler farthest from the firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 73, Fire tube, Horizontal, Projecting into firebox, Drop water firebox.

75. FIRE-TUBE, HORIZONTAL, RETURN FIRE-TUBE. Horizontal fire tube boilers so arranged that the products of combustion pass through the boiler in opposite directions two or more times before they enter the outlet flue.

Note.—Patents coming within the definitions of the following subclasses are not placed here:

Fire-tube—

Horizontal—

Depending fire-tube—

56. Rear of bridge wall,
81. Subjacent transverse fire-tube,
Two diameters—
85. Small diameter over firebox—
86. Water firebox,
87. U-coupling.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 54, Fire tube, Horizontal, Central firebox, Double outlet; 72, Fire tube, Horizontal, Projecting into firebox, and 73, Fire tube, Horizontal, Projecting into firebox, Drop water firebox; 87, Fire tube, Horizontal, U-coupling, for horizontal fire tube boilers having U-shaped couplings for the fire tubes; 149, Flue, Horizontal, Return fire tube, and the subclasses thereunder, for horizontal flue boilers having return fire tubes.

76. FIRE-TUBE, HORIZONTAL, RETURN FIRE-TUBE, DROP WATER-FIREBOX. Horizontal fire tube boilers having a water walled firebox depending from the boiler so arranged that the products of combustion pass directly through the lower tubes and return to the front of the boiler through the upper tubes and are discharged to the outlet flue at this point.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 73, Fire tube, Horizontal, Projecting into firebox, Drop water-firebox; 74, Fire tube, Horizontal, Return and reverse, Drop water-firebox, and 149, Flue, Horizontal, Return fire-tube; 107, Fire-tube, Horizontal, Water wall, Drop water-firebox.

77. FIRE-TUBE, HORIZONTAL, RETURN FIRE-TUBE, DROP WATER-FIREBOX, INTERNAL WATER-TUBE. Horizontal fire tube boilers having a drop water firebox so arranged that the products of combustion pass directly into the lower fire tubes or flues and return to the front of the boiler through the upper fire tubes, where they are discharged, and having water tubes within some of the flues or fire tubes, which may extend into the firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 141, Flue, Horizontal, Internal water tube, Longitudinal, Drop water-firebox, and 146, Flue, Horizontal, Internal water-tube, Transverse, Drop water-firebox, for allied art.

78. FIRE-TUBE, HORIZONTAL, RETURN FIRE-TUBE, WATER-FIREBOX, FLUE. Horizontal return flue fire tube boilers having a water firebox of the large flue type.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 50, Fire tube, Horizontal or inclined, Water firebox, Flue.

79. FIRE-TUBE, HORIZONTAL, SUBJACENT WATER-ARCH. Horizontal fire tube boilers having a water heating arch, formed of metal walls spaced apart, located beneath the boiler, extending either only over the firebox or along the whole combustion chamber.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 103, Fire tube, Horizontal, Water tube, Horizontal, Over bridge wall, and 105, Fire tube, Horizontal, Water tube, Rearwardly inclined, Over bridge wall, for subjacent water arches formed of water-tubes.

80. FIRE-TUBE, HORIZONTAL, SUBJACENT FLUE. Horizontal fire tube boilers having one or more cylindrical sections, provided with large flues located below the main boiler and in communication therewith. The large flues generally inclose the fuel grate and serve as a firebox. At the rear of the large flues there may or may not be small fire tubes in alinement therewith.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 50, Fire tube, Horizontal or inclined, Water-firebox, Flue, and 241, Water tube, Firebox in drum.

CLASS 122—Continued.

81. FIRE-TUBE, HORIZONTAL, SUBJACENT TRANSVERSE FIRE-TUBE. Horizontal fire-tube boilers having a water chamber depending from the main boiler, provided with transverse fire tubes and located in rear of the bridge wall.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 56, Fire tube, Horizontal, Depending fire tube, Rear of bridge wall; 85, Fire tube, Horizontal, Two diameters, Small diameter over firebox; 86, Fire-tube, Horizontal, Two diameters, Small diameter over firebox, Water-firebox; 110, Fire-tube, Transverse, Horizontal boiler; and 191, Horizontal cylinder, Subjacent fire-tube, Beyond bridge wall.

82. FIRE-TUBE, HORIZONTAL, SUPERJACENT FEED-HEATER, IN COMMUNICATION. Horizontal fire tube boilers having a feed water heater located above the main boiler, in the combustion flue, heated by the products of combustion, and in open communication with the water space of the boiler.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 443, Feed heater, Steam, Injected, Superposed, Open to steam space, for superposed feed heaters in communication with the boiler steam space.

83. FIRE-TUBE, HORIZONTAL, TRANSVERSE DIAPHRAGM. Horizontal fire-tube boilers having compartments separated by metal diaphragms transversely arranged inside the boiler, or to boilers having a combustion chamber intermediate the ends, with transverse diaphragms at each end of the combustion chamber, or to separate boilers in alinement.

Note.—This subclass includes patents defined by the subclass definition for progressively heating water fed to the boiler and also where the diaphragm is described as being only for supporting the tubes to prevent vibration or where the diaphragms are for circulation purposes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 101, Fire tube, Horizontal, Water smokebox; 151, Flue, Horizontal, Return fire tube, Water smokebox, Separate, and 425, Feed heaters, Horizontal fire tube boiler, Smokebox, Furnace gases and steam; 123, Fire tube, Vertical, Separate compartment, for vertical fire tube boilers with transverse diaphragms and having separate compartments; 125, Fire-tube, Vertical, Top water chamber.

84. FIRE-TUBE, HORIZONTAL, TWO DIAMETERS, GREAT DIAMETER OVER FIREBOX. Horizontal fire tube boilers having two diameters, with that part of the boiler having the greater diameter over the firebox. The great diameter is offset from the main boiler, and the offset portion has short fire tubes passed therethrough, while long fire tubes extend through the whole length of the boiler. The products of combustion pass out of the firebox and return through the short tubes in the offset portion, and then pass in an opposite direction to the other end of the boiler, where the outlet flue is located, or they may return and pass through the upper short tubes and leave the boiler at the outlet flue located at the firebox end.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 56, Fire-tube, Horizontal, Depending fire-tube, Rear of bridge wall, 81, Fire-tube, Horizontal, Subjacent transverse fire-tube; 85, Fire-tube, Horizontal, Two diameters, Small diameter over firebox, and 86, Fire-tube, Horizontal, Two diameters, Small diameter over firebox, Water-firebox, for similar art.

85. FIRE-TUBE, HORIZONTAL, TWO DIAMETERS, SMALL DIAMETER OVER FIREBOX. Horizontal fire-tube boilers having two diameters, the small diameter being over the firebox and the large diameter being beyond the bridge wall. The offset portion of the large diameter is provided with longitudinally extending fire tubes, through which the products of combustion from the firebox pass and then are passed through return fire tubes extending the whole length of the boiler. The products of combustion may then pass to the outlet flue at the front end of the boiler, or they may pass rearwardly above the boiler to the outlet flue located at the rear end, and in their final rearward passage may pass through fire tubes in an upwardly offset portion of the boiler.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 56, Fire-tube, Horizontal, Depending fire tube, Rear of bridge wall; 81, Fire-tube, Horizontal, Subjacent transverse fire tube; 86, Fire-tube, Horizontal, Two diameters, Small diameter over firebox, Water firebox; 110, Fire-tube, Transverse, Horizontal boiler; and 191, Horizontal cylinder, Subjacent fire-tube, Beyond bridge wall.

86. FIRE-TUBE, HORIZONTAL, TWO DIAMETERS, SMALL DIAMETER OVER FIREBOX, WATER-FIRE-BOX. Types of boilers defined in the preceding subclass (85) and having a water firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 56, Fire tube, Horizontal, Depending fire tube, Rear of bridge wall; 81, Fire tube, Horizontal, Subjacent transverse fire tube; 110, Fire tube, Transverse, Horizontal boiler, and 191, Horizontal cylinder, Subjacent fire tube, Beyond bridge wall.

87. FIRE-TUBE, HORIZONTAL, U-COUPLING. Horizontal fire tube boilers provided with U-shaped couplings connecting the fire tubes at the ends of the boiler, in order that the products of combustion may flow back and forth through the fire tubes in succession.

CLASS 122—Continued.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 75, Fire-tube, Horizontal, Return fire tube, for miscellaneous boilers of the horizontal fire-tube type where the products of combustion pass back and forth through the fire tubes; 360, Water tube, Headers, Closures and Couplings, for U-couplings.

88. FIRE-TUBE, HORIZONTAL, UPPER DRUM. Horizontal fire-tube boilers having a superposed horizontal upper drum.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 50, Fire tube, Horizontal or inclined, Water firebox, Flue, for similar art; 486, Steam treatment, Superheater, Steam dome; and 492, Separators, Steam dome, for special features.

89. FIRE-TUBE, HORIZONTAL, WATER-ARCH, REAR OF FIRE-TUBE. Horizontal fire tube boilers provided with a water-cooled arch over the combustion chamber at the rear of the fire tubes. This arch may be formed of plates spaced apart or of water tubes or water tubes combined with solid material like firebrick.

90. FIRE-TUBE, HORIZONTAL, WATER-FIREBOX. Miscellaneous horizontal fire tube boilers having a water firebox that are not otherwise classified.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 50, Fire tube, Horizontal or inclined, Water firebox, Flue, for horizontal or inclined fire tube boilers having a large flue for the firebox; 58, Fire tube, Horizontal, Drop water firebox, and the subclasses thereunder, for horizontal fire tube boilers with drop water fireboxes; 73, Fire tube, Horizontal, Projecting into firebox, Drop water firebox, for horizontal fire tube boilers with the barrel of the boiler projecting into the firebox, which is of the drop water firebox type; 74, Fire tube, Horizontal, Return and reverse, Drop water firebox; and 75, Fire tube, Horizontal, Return fire tube, and the subclasses thereunder, for return fire tube boilers with water fireboxes; 107, Fire tube, Horizontal, Water wall, Drop water firebox, for water walls with drop water fireboxes; 139, Flue, Horizontal, Drop water firebox, and 141, Flue, Horizontal, Internal water tube, Longitudinal, Drop water firebox, for water fireboxes with other types of horizontal flue boilers; 149, Flue, Horizontal, Return fire tube, for boilers having a large flue, with a water firebox; 189, Horizontal cylinder, Offset subjacent firebox, Water roof; 193, Horizontal cylinder, Water firebox, and 194, Horizontal cylinder, Water firebox, Water tube type, for water fireboxes for horizontal cylindrical boilers which may or may not have horizontal fire tubes.

91. FIRE-TUBE, HORIZONTAL, WATER-FIREBOX, FIRE-BOX WATER-HEATER, TRAPPED CIRCUIT. Horizontal fire tube boilers having a water firebox, with some form of water heating chamber or conduits within the firebox, connected in circuit with the main part of the boiler, with some form of sediment trap in the water circuit.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 59, Fire tube, Horizontal, Drop water firebox, Circulation conduit, for circulating conduits with water heaters in the firebox; 202, Horizontal cylinder, Water tube, Trapped circuit, for horizontal cylindrical boilers having water heating tubes or chambers in circuit with the boiler, with a sediment trap in the circuit; 380, Cleaning, Agitating circulator, and 403, Cleaning, Trapped circuit, Surface exit, Feed heater, for analogous art with a trapped circuit.

92. FIRE-TUBE, HORIZONTAL, WATER-FIREBOX, MAGAZINE. Horizontal fire tube boilers with a water firebox provided with a fuel magazine.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 46, Fire tube, Magazine, for miscellaneous fire-tube boilers with a fuel magazine; 66, Fire tube, Horizontal, Drop water firebox, Water coking chamber.

93. FIRE-TUBE, HORIZONTAL, WATER-FIREBOX, OFFSET. Horizontal fire tube boilers having fire tubes, either large or small, with an offset water firebox at the end of the boiler so arranged that the products of combustion pass from the firebox directly into the fire-tubes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 189, Horizontal cylinder, Offset subjacent firebox, Water roof, and 190, Horizontal cylinder, Offset subjacent firebox, Water tube, for offset water fireboxes so arranged that the products of combustion pass beneath the boiler upon leaving the firebox.

94. FIRE-TUBE, HORIZONTAL, WATER-FIREBOX, OFFSET, WATER-TUBE TYPE. Horizontal fire tube boilers having an offset water firebox composed of water tubes in whole or in part arranged so that the products pass directly through the fire tubes after leaving the firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 190, Horizontal cylinder, Offset subjacent firebox, Water-tube, for analogous art.

95. FIRE-TUBE, HORIZONTAL, WATER - FIREBOX, PLURAL, COMMON COMBUSTION CHAMBER. Horizontal fire-tube boilers having a plurality of water fireboxes in communication with a common combustion chamber located between the fireboxes and the fire tubes.

CLASS 122—Continued.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 57, Fire-tube, Horizontal, Double water firebox, Alternate smoke return, 60, Fire tube, Horizontal, Drop water firebox, Double, Alternate smoke return, and 96, Fire-tube, Horizontal, Water firebox, Superposed, for horizontal fire tube boilers having a plurality of water fireboxes; 64, Fire-tube, Horizontal, Drop water firebox, Interposed combustion chamber, and 100, Fire-tube, Horizontal, Water firebox, Water tube type, Interposed flue, for horizontal fire tube boilers having a water firebox, with a combustion chamber between the firebox and fire-tubes.

96. FIRE-TUBE, HORIZONTAL, WATER - FIREBOX, SUPERPOSED. Horizontal fire tube boilers having superposed water fireboxes of a miscellaneous type.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 66, Fire-tube, Horizontal, Drop water firebox, Water coking chamber, and 67, Fire tube, Horizontal, Drop water firebox, Water-grate, Intermediate draft, for special types of superposed fuel chambers.

97. FIRE-TUBE, HORIZONTAL, WATER - FIREBOX, WATER GRATE, DOWNDRAFT. Horizontal fire-tube boilers having a water firebox with a downdraft water grate.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 203, Horizontal cylinder, Water-tube, Water-grate, Downdraft.

98. FIRE-TUBE, HORIZONTAL, WATER - FIREBOX, WATER-GRATE, UPDRAFT. Horizontal fire tube boilers having a water firebox with an updraft water grate.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 374, Water grate, Grate structure; 377, Water grate, Water firebox, Solid and water bar, Updraft, and 378, Water grate, Water firebox, Updraft, for structure of grate.

99. FIRE-TUBE, HORIZONTAL, WATER - FIREBOX, WATER-TUBE, STRADDLE. Horizontal fire tube boilers having a water firebox with water tubes therein straddling the fuel chamber.

100. FIRE-TUBE, HORIZONTAL, WATER - FIREBOX, WATER-TUBE TYPE, INTERPOSED FLUE. Horizontal fire tube boilers having a water firebox of the water tube type constructed wholly or in part of water tubes, with an interposed large flue between the firebox and the fire tubes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 94, Fire tube, Horizontal, Water firebox, Offset, Water tube type, for similar firebox structure; 64, Fire tube, Horizontal, Drop water firebox, Interposed combustion chamber; 94, Fire tube, Horizontal, Water firebox, Offset, Water tube type, and 95, Fire tube, Horizontal, Water firebox, Plural, Common combustion chamber, for combustion chambers interposed between firebox and fire tubes.

101. FIRE-TUBE, HORIZONTAL, WATER - SMOKEBOX. The structure of a water cooled smokebox of horizontal fire tube boilers.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 151, Flue, Horizontal, Return fire tube, Water smokebox, Separate; 423, Feed heaters, Horizontal firetube boiler, Smokebox; 425, Feed heaters, Horizontal fire tube boiler, Smokebox, Furnace gases and steam, and 426, Feed heaters, Horizontal fire tube boiler, Smokebox, Water tube, for special features.

102. FIRE-TUBE, HORIZONTAL, WATER-TUBE, HORIZONTAL, OVER BRIDGE-WALL. Horizontal fire tube boilers having water tubes extending horizontally over the bridge wall.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 154, Flue, Horizontal, Water tube, Over bridge wall, for horizontal flue boilers with water tubes over the bridge wall; 195, Horizontal cylinder, Water tube, 196, Horizontal cylinder, Water tube, Feed heater, Check valve, 197, Horizontal cylinder, Water tube, Lateral longitudinal, 201, Horizontal cylinder, Water tube, Subjacent internal fire tube, and 202, Horizontal cylinder, Water tube, Trapped circuit, for horizontal cylindrical boilers having fire tubes, with water tubes extending horizontally over the bridge wall, where it is immaterial whether the boiler is provided with fire tubes or not; 263, Water tube, Horizontal, Over bridge wall, for water tube boilers having water tubes horizontal over the bridge wall.

103. FIRE-TUBE, HORIZONTAL, WATER-TUBE, REAR OF FIRE-TUBE. Horizontal fire tube boilers having water tubes in the rear of the fire tubes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 150, Flue Horizontal, Return fire tube, Rear water tube, for closely allied art; 153, Flue, Horizontal, Water tube, for horizontal flue boilers with water tubes; 89, Fire tube, Horizontal, Water arch, Rear of fire tube, and 195, Horizontal cylinder, Water tube, for related art.

104. FIRE-TUBE, HORIZONTAL, WATER-TUBE, REARWARDLY DECLINED, OVER BRIDGE-WALL. Horizontal fire tube boilers having rearwardly declined water tubes over the bridge wall.

CLASS 122—Continued.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 108, Fire tube, Horizontal, Water-wall, Subjacent water-tube; 154, Flue, Horizontal, Water-tube, Over bridge wall, for horizontal flue boilers, with water-tubes over the bridge wall; 195, Horizontal cylinder, Water tube, 196, Horizontal cylinder, Water tube, Feed-heater, Check valved; 197, Horizontal cylinder, Water-tube, Lateral longitudinal; 201, Horizontal cylinder, Water-tube, Subjacent internal fire-tube, and 202, Horizontal cylinder, Water-tube, Trapped circuit, for horizontal cylindrical boilers provided with various kinds of water-tubes in the combustion chamber; 291, Water-tube, Rearwardly declined, Over bridge wall, Front and rear header, Horizontal longitudinal drum, and the subclasses thereunder, and 296, Water-tube, Rearwardly declined, Over bridge wall, Front and rear header, Longitudinal declined drum, for rearwardly declined water-tubes over the bridge wall, having a longitudinally posited drum without fire-tubes over the water-tubes.

105. FIRE-TUBE, HORIZONTAL, WATER-TUBE, REARWARDLY INCLINED, OVER BRIDGE-WALL. Horizontal fire tube boilers having water tubes inclined rearwardly over the bridge wall.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 108, Fire tube, Horizontal, Water wall, Subjacent water tube; 154, Flue, Horizontal, Water tube, Over bridge wall, for horizontal flue boilers with water tubes over the bridge wall; 265, Water tube, Inclined, for rearwardly inclined water tube boilers over the bridge wall.

106. FIRE-TUBE, HORIZONTAL, WATER-WALL. Horizontal fire-tube boilers having water walls at the sides, front, or rear of the boiler or at all of said locations. The wall may also extend across the boiler below the combustion chamber.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 107, Fire tube, Horizontal, Water wall, Drop water firebox, and 108, Fire tube, Horizontal Water wall, Subjacent water tube, for similar art.

107. FIRE-TUBE, HORIZONTAL, WATER-WALL, DROP WATER FIREBOX. Horizontal fire-tube boilers having water walls that may extend underneath the main part of the boiler and having a water walled firebox depending from the boiler structure.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 76, Fire tube, Horizontal, Return fire tube, Drop water firebox, and 149, Flue, Horizontal, Return fire tube, for closely related art.

108. FIRE-TUBE, HORIZONTAL, WATER-WALL, SUBJACENT WATER-TUBE. Horizontal fire tube boilers with depending water walls, with some form of water tubes between the walls in the combustion chamber.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 135, Flue, and 136, Flue, Horizontal, for closely allied structure.

109. FIRE-TUBE, INCLINED. Miscellaneous boilers having inclined fire tubes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 50, Fire tube, Horizontal or inclined, Water firebox, Flue, for similar art; 47, Fire tube, Flue, Horizontal; 51, Fire tube, Horizontal; 54, Fire tube, Horizontal, Central firebox, Double outlet, and 110, Fire tube, Transverse, Horizontal boiler, for boilers having some of the fire tubes inclined.

110. FIRE-TUBE, TRANSVERSE, HORIZONTAL BOILER. Horizontally disposed boilers having transverse fire tubes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 56, Fire tube, Horizontal, Depending fire tube, Rear of bridge wall, and 191, Horizontal cylinder, Subjacent fire tube, Beyond bridge wall, for analogous art; 81, Fire tube, Horizontal, Subjacent transverse fire tube, for horizontal fire tube boilers with transverse fire tubes; 113, Fire tube, Transverse, Water tube, for combinations of transverse fire tubes, with water tubes.

111. FIRE-TUBE, TRANSVERSE, VERTICAL BOILER. Vertical boilers having transverse fire tubes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 187, Flue, Vertical, Transverse fire tube, for vertical flue boilers with transverse fire tubes.

112. FIRE-TUBE, TRANSVERSE, VERTICAL BOILER, WATER-FIREBOX. Vertical boilers having transverse fire tubes and a water firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 187, Flue, Vertical, Transverse fire tube, for vertical flue boilers having fire tubes extending from the inner large flue to the outside of the boiler; 220, Sectional, Horizontal sections, Superimposed, Water tube, Internal fire tube, Water firebox, for sectional boilers.

113. FIRE-TUBE, TRANSVERSE, WATER-TUBE. Fire tube boilers having fire tubes extending transversely through the boiler and also having water tubes in communication with the boiler.

CLASS 122—Continued.

114. FIRE-TUBE, VERTICAL. Miscellaneous boilers having vertical fire tubes not otherwise provided for.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses, 13, Stand boiler; 15, Stand boiler, Solid fuel; 16, Stand boiler, Fire tube and water tube, Fluid fuel, and 17, Stand boiler, Fire tube, Fluid fuel, for "stand boilers" or "range boilers" provided with vertical fire tubes; 20, Subsidiary, for boilers having auxiliary water heaters; 37, Compartment, for vertical fire tube boilers having separate boiler compartments which may or may not be in communication with each other. (One compartment may be used as a water heater and the other as a steam generator); 40, Flasher, and 41, Flasher, Fluid fuel, for flash boilers with vertical fire tubes; 42, Fire and water tube, and 43, Fire and water tube, Fluid fuel, for combinations of water tube and fire tube boilers of a miscellaneous character; 48, Fire tube, Flue, Vertical, for combinations of fire tube boilers with vertical flue boilers or fire tube boilers having a large vertical flue of a miscellaneous character; 49, Fire tube, Horizontal and vertical, for boilers having both horizontal and vertical tubes; 110, Fire tube, Transverse, Horizontal boiler, for horizontally disposed boilers with transverse vertical fire tubes; 115, Fire tube, Vertical, Fluid fuel, and 119, Fire tube, Vertical, Cylinder, for vertical cylindrical boilers with vertical fire tubes; 178, Flue, Vertical, Internal water tube, Vertical aligned fire tube, and the subclasses thereunder, for vertical cylindrical fire tubes above and in alignment with a vertical flue in the boiler, (see also subclass 48, Fire tube, Flue, Vertical); 182, Flue, Vertical, Return fire tube, for vertical flue boilers with return fire tubes.

115. FIRE-TUBE, VERTICAL, FLUID FUEL. Boilers having vertical fire tubes heated by fluid fuel.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 16, Stand boiler, Fire tube and water tube, Fluid fuel, and 17, Stand boiler, Fire tube, Fluid fuel, for stand boilers heated by fluid fuel and having vertical fire tubes; 22, Fluid and solid fuel, for miscellaneous boilers heated by solid or fluid fuel; 23, Fluid fuel, for miscellaneous boilers heated by fluid fuel; 24, Fluid fuel, Explosion, for boilers heated by fluid fuel which is exploded while burning; 43, Fire and water tube, Fluid fuel, for combined fire tube and water tube boilers heated by fluid fuel that are of a miscellaneous nature; 156, Flue, Vertical, Fluid fuel, for vertical flue boilers heated by fluid fuel; 167, Flue, Vertical, Internal water tube, Fluid fuel; 177, Flue Vertical, Internal water tube, Transverse, Fluid fuel, and 179, Flue, Vertical, Internal water tube, Vertical aligned fire tube, Fluid fuel, for vertical flue boilers combined with internal water tubes and heated by fluid fuel; 161, Flue, Vertical, Concentric shell, Fluid fuel, and 183, Flue, Vertical, Spiral water conduit, Fluid fuel, for other types of vertical flue boilers heated by fluid fuel.

116. FIRE-TUBE, VERTICAL, CENTRAL FIRE-DOME. Vertical fire tube boilers provided with a large space or dome at the lower end of the boiler, extending into the boiler, located over the firebox, with vertical fire tubes disposed around the dome.

117. FIRE-TUBE, VERTICAL, CENTRAL MAGAZINE. Boilers having vertical fire tubes and a centrally disposed fuel magazine.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 30, Magazine, for miscellaneous magazine boilers; 128, Fire tube Vertical, Water firebox, Central magazine, for vertical fire tube boilers having a water firebox and a central fuel magazine; 157, Flue, Vertical, Central magazine, and 163, Flue, Vertical, Internal water tube, Central magazine, for vertical flue boilers with a central fuel magazine.

118. FIRE-TUBE, VERTICAL, CIRCULATION TUBE, INTERNAL. Vertical fire tube boilers having sleeves, cylinders, or tubes arranged inside the boiler for aiding the boiler circulation.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 159, Flue, Vertical, Circulation tube, Internal, for similar devices within a vertical flue boiler; 408, Circulation, Internal conduit.

119. FIRE-TUBE, VERTICAL, CYLINDER. Vertical cylindrical boilers provided with vertical fire tubes that do not fall within the definition of other subclasses.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 115, Fire tube, Vertical, Fluid fuel, for vertical cylindrical boilers heated by fluid fuel.

120. FIRE-TUBE, VERTICAL, OFFSET FIREBOX. Vertical fire tube boilers having an offset firebox out of alignment with the fire tubes. The firebox is generally of the water firebox type.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 175, Flue, Vertical, Internal water tube, Offset water firebox, for vertical flue boilers with an offset water firebox.

121. FIRE-TUBE, VERTICAL, RETURN FIRE-TUBE. Vertical fire tube boilers provided with fire tubes through which the products of combustion pass upon leaving the firebox and also fire tubes through which the products of combustion return to the other end of the boiler before they enter the outlet flue.

CLASS 122—Continued.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 128, Fire tube, Vertical, Water firebox, Central magazine, for this type of boiler having a central magazine; 182, Flue, Vertical, Return fire tube, for vertical flue boilers having return fire tubes.

122. FIRE-TUBE, VERTICAL, RETURN FIRE-TUBE, WATER-FIREBOX. Boilers defined in subclass 121 above and having a water firebox. The return fire tubes may be through the same boiler section or in another boiler section placed beside the other.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 182, Flue, Vertical, Return fire tube.

123. FIRE-TUBE, VERTICAL, SEPARATE COMPARTMENT. Vertical fire tube boilers provided with separate compartments, either by diaphragms extending across the tubes or by complete boiler sections superposed or placed side by side, and having the feed water introduced into the compartment farthest from the firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 83, Fire tube, Horizontal, Transverse diaphragm, for horizontal fire tube boilers having a progressive heating of the feed water; 122, Fire tube, Vertical, Return fire tube, Water firebox; 125, Fire tube, Vertical, Top water chamber, for analogous art.

124. FIRE-TUBE, VERTICAL, SIDE MAGAZINE. Vertical fire tube boilers having a fuel magazine disposed on one or more sides of the boiler.

125. FIRE-TUBE, VERTICAL, TOP WATER-CHAMBER. Vertical fire tube boilers having a separate water chamber above the steam space, through which the fire tubes pass to prevent the leaking of flue joints or to heat feed water.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 123, Fire tube, Vertical, Separate compartment, for similar art; 83, Fire tube, Horizontal, Transverse diaphragm, and 164, Flue, Vertical, Insulated outlet flue.

126. FIRE-TUBE, VERTICAL, WATER-FIREBOX. Vertical fire tube boilers having a water firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 48, Fire tube, Flue, Vertical, for analogous structure; 120, Fire tube, Vertical, Offset firebox, for offset fireboxes; 122, Fire tube, Vertical, Return fire tube, Water firebox, for return fire tube vertical fire tube boilers with a water firebox; 178, Flue, Vertical, Internal water tube, Vertical aligned fire tube, and the subclasses thereunder, for similar structure.

127. FIRE-TUBE, VERTICAL, WATER-FIREBOX, ANNULAR. Vertical fire tube boilers having a water firebox in the form of a ring or the like.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 29, Annular firebox, for annular fireboxes with miscellaneous types of boilers; 184, Flue, Vertical, Stand pipe, Water tube, Annular firebox, for vertical flue boilers with an annular firebox.

128. FIRE-TUBE, VERTICAL, WATER-FIREBOX, CENTRAL MAGAZINE. Vertical fire tube boilers having a water firebox and a central fuel magazine.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 117, Fire tube, Vertical, Central magazine, for miscellaneous vertical fire tube boilers having a central fuel magazine; 157, Flue, Vertical, Central magazine, and 168, Flue, Vertical, Internal water tube, Central magazine, for vertical flue boilers with a central magazine.

129. FIRE-TUBE, VERTICAL, WATER-GRATE, DOWNDRAFT. Vertical fire-tube boilers having a downdraft water grate.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 371, Water-grate, for miscellaneous boilers with water grates.

130. FIRE-TUBE, VERTICAL, WATER-TUBE. Vertical fire-tube boilers having some form of water-tubes, not otherwise provided for.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 166, Flue, Vertical, Internal water tube, and the subclasses thereunder, for vertical flue boilers with water tubes in the flues.

131. FIRE-TUBE, VERTICAL, WATER-TUBE, INTERNAL. Vertical fire-tube boilers having water tubes within the fire tubes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 166, Flue, Vertical, Internal water-tube, and the subclasses thereunder, for vertical flue boilers with water tubes in the flue.

132. FIRE-TUBE, VERTICAL, WATER-TUBE, RADIAL LOOP. Vertical fire-tube boilers having looped water tubes arranged around the boiler.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 185, Flue, Vertical, Stand pipe, Water-tube, Loop, for vertical flue boilers with looped water tubes around a stand pipe within the flue; 244, Water tube, Coil or loop, Central stand pipe, and the subclasses thereunder, and 281, Water-tube, Loop, Over firebox, Stand pipe, for water tube boilers having a stand pipe with water tubes surrounding it.

CLASS 122—Continued.

133. FIRE-TUBE, VERTICAL, WATER-TUBE, SPUR. Vertical fire-tube boilers provided with spur water tubes.

134. FIRE-TUBE, VOLUTE. Fire-tube boilers having one or more fire tubes in the form of a volute.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 261, Water-tube, Flat, Volute, for water tubes of similar form. (See also the search notes thereunder.)

135. FLUE. Miscellaneous boilers having one or more large fire-tubes or flues wholly surrounded by the water space or only partly surrounded thereby.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 6, Industrial, and the subclasses thereunder, for industrial furnace boilers; 20, Subsidiary, and 37, Compartment; 47, Fire tube, Flue, Horizontal, and 48, Fire tube, Flue, Vertical, for combinations of miscellaneous fire tube and flue boilers; 368, Water firebox, for analogous art.

136. FLUE, HORIZONTAL. Boilers having a large horizontal flue not otherwise provided for.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 47, Fire-tube, Flue, Horizontal, for miscellaneous fire tube boilers having a large horizontal flue; 73, Fire-tube, Horizontal, Return fire tube, Water firebox, Flue, for horizontal return fire tube boilers with a horizontal flue firebox; 80, Fire tube, Horizontal, Subjacent flue, for horizontal fire-tube boilers with a large flue boiler section beneath the boiler; 409, Circulation, Internal conduit, Horizontal flue boiler, and 410, Circulation, Internal conduit, Horizontal flue boiler, Return fire-tube.

137. FLUE, HORIZONTAL, PLURAL. A plurality of horizontal boilers with large flues, either posited side by side or superposed one above the other.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 52, Fire-tube, Horizontal, Plural, for similar arrangement of fire tube boilers.

138. FLUE, HORIZONTAL, PLURAL, WATER-TUBE. The combination and arrangement of plural horizontal flue boilers, having water tubes in communication with the boilers.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 102, Fire-tube, Horizontal, Water tube, Horizontal, Over bridge wall; 104, Fire tube, Horizontal, Water-tube, Rearwardly declined, Over bridge wall, and 105, Fire tube, Horizontal, Water tube, Rearwardly inclined, Over bridge wall, for boiler structure not included in this subclass where horizontal flue boilers are disclosed; 140, Flue, Horizontal, Internal water-tube, and the subclasses thereunder, for horizontal flue boilers with internal water tubes; 183, Flue, Horizontal, Water-tube; 154, Flue, Horizontal, Water-tube, Over bridge wall, for horizontal flue boilers with water tubes exterior of the boiler; 53, Fire-tube, Horizontal, Plural, Water-tube; 195, Horizontal cylinder, Water tube, for horizontal cylindrical fire-tube boilers with similar arrangement.

139. FLUE, HORIZONTAL, DROP WATER-FIREBOX. Boilers having one or more large flues horizontally disposed, with a drop water firebox at one end of the boiler.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 58, Fire tube, Horizontal, Drop water-firebox, and the subclasses thereunder, for horizontal fire tube boilers with drop water firebox of analogous structure; 141, Flue, Horizontal, Internal water-tube, Longitudinal, Drop water-firebox; 146, Flue, Horizontal, Internal water tube, Transverse, Drop water firebox, and 148, Flue, Horizontal, Internal water-tube, Water-firebox, for other types of horizontal flue boilers with drop water fireboxes.

140. FLUE, HORIZONTAL, INTERNAL WATER-TUBE. Horizontal flue boilers having some form of water tubes in the flues.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 43, Fire and water tube, Fluid fuel, for horizontal flue boilers having internal water tubes heated by fluid fuel; 154, Flue, Horizontal, Water tube, Over bridge wall, for special art having water tubes within a large horizontal flue.

141. FLUE, HORIZONTAL, INTERNAL WATER-TUBE, LONGITUDINAL, DROP WATER-FIREBOX. Horizontal flue boilers having a drop water firebox with longitudinal water tubes in the flues.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 77, Fire tube, Horizontal, Return fire tube, Drop water firebox, Internal water tube, and 146, Flue, Horizontal, Internal water tube, Transverse, Drop water firebox, for allied art; 154, Flue, Horizontal, Water tube, Over bridge wall, for longitudinal water tubes within the flue.

142. FLUE, HORIZONTAL, INTERNAL WATER-TUBE, RETURN FIRE-TUBE. Horizontal flue boilers having return fire tubes, with some form of water tubes within the large flues.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 77, Fire tube, Horizontal, Return fire tube, Drop water firebox, Internal water tube, for analogous art; 147, Flue, Horizontal, Internal water tube, Transverse, Return fire tube, for horizontal

CLASS 122—Continued.

flue boilers having return fire tubes, with transverse water tubes in the flues; 149, Flue, Horizontal, Return fire tube, for horizontal flue boilers with return fire tubes; 150, Flue, Horizontal, Return fire tube, Rear water tube, for horizontal flue boilers with return fire tubes, with water tubes at the rear of the flues and fire tubes; 151, Flue, Horizontal, Return fire tube, Water smokebox, Separate, for return fire tube horizontal flue boilers with a separate water smokebox.

143. FLUE, HORIZONTAL, INTERNAL WATER-TUBE, SPUR. Horizontal flue boilers having spur water tubes in the flues.

144. FLUE, HORIZONTAL, INTERNAL WATER-TUBE, SUBJACENT FIREBOX. Horizontal flue boilers having water tubes in the flue, with a firebox located beneath the boiler.

145. FLUE, HORIZONTAL, INTERNAL WATER-TUBE, TRANSVERSE. Horizontal flue boilers having water tubes extending across the flues and communicating with the boiler at both ends.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 143, Flue, Horizontal, Internal water tube, Spur, for spur tubes in the flue.

146. FLUE, HORIZONTAL, INTERNAL WATER-TUBE, TRANSVERSE, DROP WATER-FIREBOX. Horizontal flue boilers having a drop water-firebox, with water tubes arranged transversely in the flue.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 77, Fire tube, Horizontal, Return fire tube, Drop water firebox, Internal water tube, for analogous art; 141, Flue, Horizontal, Internal water tube, Longitudinal, Drop water firebox, for the same structure with longitudinally placed water tubes in the flue.

147. FLUE, HORIZONTAL, INTERNAL WATER-TUBE, TRANSVERSE, RETURN FIRE-TUBE. Horizontal flue boilers having small fire-tubes, through which the products of combustion pass, after leaving the large horizontal flues, in an opposite direction, the large flues having water tubes disposed transversely therein.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 143, Flue, Horizontal, Internal water tube, Spur, for large flues having spur water tubes therein; 142, Flue, Horizontal, Internal water tube, Return fire tube; 146, Flue, Horizontal, Internal water tube, Transverse, Drop water-firebox, and 149, Flue, Horizontal, Return fire-tube, for special features.

148. FLUE, HORIZONTAL, INTERNAL WATER-TUBE, WATER FIREBOX. Horizontal flue boilers with water tubes in the flue and having a water-firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 77, Fire tube, Horizontal, Return fire tube, Drop water firebox, Internal water tube, for similar art; 141, Flue, Horizontal, Internal water tube, Longitudinal, Drop water firebox, for horizontal flue boilers with a drop water firebox, with water tubes in the flue, running longitudinally; 146, Flue, Horizontal, Internal water tube, Transverse, Drop water firebox, for horizontal flue boilers with transverse water tubes and with a drop water firebox.

149. FLUE, HORIZONTAL, RETURN FIRE-TUBE. Boilers having one or more large flues horizontally disposed and having horizontally disposed small fire tubes, through which the products of combustion are returned through the boiler after leaving the large flues. The firebox is generally located in the large flues.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 47, Fire tube, Flue, Horizontal, for miscellaneous boilers having fire tubes with a horizontal flue; 76, Fire tube, Horizontal, Return fire tube, Drop water firebox, for similar art; 74, Fire tube, Horizontal, Return and reverse, Drop water firebox; 76, Fire tube, Horizontal, Return fire tube, Drop water firebox, and 107, Fire tube, Horizontal, Water wall, Drop water firebox, for related art in the fire tube type boiler; 141, Flue, Horizontal, Internal water tube, Longitudinal, Drop water firebox; 146, Flue, Horizontal, Internal water tube, Transverse, Drop water firebox; 150, Flue, Horizontal, Return fire tube, Rear water tube; 151, Flue, Horizontal, Return fire tube, Water smokebox, Separate, and 410, Circulation, Internal conduit, Horizontal flue boiler, Return fire tube, for other types of horizontal flue boilers having return fire tubes.

150. FLUE, HORIZONTAL, RETURN FIRE-TUBE, REAR WATER-TUBE. Horizontal fire tube boilers having return fire tubes, with water tubes at the rear of the flues and fire tubes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 77, Fire tube, Horizontal, Return fire tube, Drop water firebox, Internal water tube, and 103, Fire tube, Horizontal, Water tube, Rear of fire tube, for similar art in a fire tube type of boiler.

151. FLUE, HORIZONTAL, RETURN FIRE-TUBE, WATER-SMOKEBOX, SEPARATE. Horizontal return fire tube boilers having a separate compartment at the rear of the fire tubes and flues in which feed water may be heated.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 425, Feed heaters, Horizontal fire tube boiler, Smokebox, Furnace gases and steam, for similar structure.

CLASS 122—Continued.

152. FLUE, HORIZONTAL, WATER-GRATE IN FLUE. Horizontal flue boilers with some form of water grate within the flue.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 371, Water grate, and the subclasses thereunder, for structure of water grates; 376, Water grate, Progressive feed, for horizontal flue boilers with progressive fuel feed water grates in the flue.

153. FLUE, HORIZONTAL, WATER-TUBE. Miscellaneous horizontal flue boilers not otherwise provided for.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses under Fire tube, Horizontal, Water tube; 138, Flue, Horizontal, Plural, Water tube, for plural boilers with water tubes.

154. FLUE, HORIZONTAL, WATER-TUBE, OVER BRIDGE-WALL. Boilers having a large horizontal flue therein, either open or closed at the bottom side, with water tubes extending over the bridge wall in the flue.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 77, Fire tube, Horizontal, Return fire tube, Drop water firebox, Internal water tube; 102, Fire tube, Horizontal, Water tube, Horizontal, Over bridge wall; 104, Fire tube, Horizontal, Water tube, Rearwardly declined, Over bridge wall; 105, Fire tube, Horizontal, Water tube, Rearwardly inclined, Over bridge wall, and 108, Fire tube, Horizontal, Water wall, Sub-jacent water tube, for related structure; 141, Flue, Horizontal, Internal water tube, Longitudinal, Drop water firebox, for closely allied art in the horizontal flue type of boiler.

155. FLUE, VERTICAL. Miscellaneous boilers having a large vertical flue not provided for in other subclasses.

Note.—The following subclasses are cited as disclosing art with vertical flue boilers:

Plants—

2. Garbage.

Industrial—

8. Water firebox.

13. Stand-boiler—

15. Solid fuel.

Note.—See notes to subclass 44, Fire tubes, for distinction between "fire tubes" and "flues" as used in this class.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 48, Fire tube, Flue, Vertical, for miscellaneous fire tube boilers having a vertical flue, and 368, Water firebox.

156. FLUE, VERTICAL, FLUID FUEL. Miscellaneous vertical flue boilers heated by fluid fuel.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 22, Fluid and solid fuel, for miscellaneous boilers heated by solid or fluid fuel; 23, Fluid fuel, for miscellaneous boilers heated by fluid fuel; 115, Fire tube, Vertical, Fluid fuel, for vertical fire tube boilers heated by fluid fuel; 167, Flue, Vertical, Internal water tube, Fluid fuel; 177, Flue, Vertical, Internal water tube, Transverse, Fluid fuel; 179, Flue, Vertical, Internal water tube, Vertical aligned fire tube, Fluid fuel, and 183, Flue, Vertical, Spiral water conduit, Fluid fuel, for other types of vertical flue boilers heated by fluid fuel.

157. FLUE, VERTICAL, CENTRAL MAGAZINE. Vertical flue boilers having a centrally posited fuel magazine not otherwise provided for.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 117, Fire tube, Vertical, Central magazine, and 123, Fire tube, Vertical, Water fire box, Central magazine, for vertical fire tube boilers with central magazines; 158, Flue, Vertical, Central magazine, Water jacket, for vertical flue boilers with a water jacketed central fuel magazine; 162, Flue, Vertical, Concentric shell, Central magazine, for vertical flue boilers having concentric water heating shells with a central magazine; 168, Flue, Vertical, Internal water tube, Central magazine, for vertical flue boilers provided with water tubes within the flue and having a central fuel magazine.

158. FLUE, VERTICAL, CENTRAL MAGAZINE, WATER-JACKET. Vertical flue boilers having a central water jacketed fuel magazine.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 117, Fire tube, Vertical, Central magazine, and 123, Fire tube, Vertical, Water fire box, Central magazine, for vertical fire tube boilers with central magazines; 157, Flue, Vertical, Central magazine, and 162, Flue, Vertical, Concentric shell Central magazine, for vertical flue boilers with central fuel magazines.

159. FLUE, VERTICAL, CIRCULATION TUBE, INTERNAL. Vertical flue boilers having internal tubes, cylinders, or sleeves inside the boiler space for increasing the circulation of water.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 118, Fire tube, Vertical, Circulation tube, Internal, for similar art; 408, Circulation, Internal conduit, for circulation features of a general character.

160. FLUE, VERTICAL, CONCENTRIC SHELL. Vertical flue boilers consisting of a plurality of concentrically posited annular water shells formed of walls spaced apart.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 158, Flue, Vertical, Central magazine, Water jacket, for special forms of this type of boiler.

CLASS 122—Continued.

161. **FLUE, VERTICAL, CONCENTRIC SHELL, FLUID FUEL.** Vertical boilers consisting of two or more annular water chambers concentrically and vertically posited and heated by fluid fuel.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 183, Flue, Vertical, Spiral water conduit, Fluid fuel.

162. **FLUE, VERTICAL, CONCENTRIC SHELL, CENTRAL MAGAZINE.** Vertical flue boilers having one or more concentrically located water containing chambers of annular form within the vertical flue and having a centrally disposed fuel magazine.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 157, Flue, Vertical, Central magazine, for vertical flue boilers with a central fuel magazine without the water jacket; 158, Flue, Vertical, Central magazine, Water jacket, for a water jacketed fuel magazine centrally disposed in the vertical flue.

163. **FLUE, VERTICAL, EXTERIOR DRUM.** Vertical flue boilers having a steam or water drum located outside of the main boiler structure.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 20, Subsidiary, for similar art.

164. **FLUE, VERTICAL, INSULATED OUTLET-FLUE.** Vertical flue boilers having the outlet flue through the steam space of the boiler provided with a heat insulator to prevent heating the steam space. This insulator may be of some packing material or formed by an air chamber.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 125, Fire tube, Vertical, Top water chamber.

165. **FLUE, VERTICAL, INTERNAL WATER-HEATER.** Boilers having a large vertical flue, within which is some form of water heater other than water tubes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 160, Flue, Vertical, Concentric shell, and 185, Flue, Vertical, Standpipe, Water tube, Loop, for allied art; 166, Flue, Vertical, Internal water tube, and the subclasses thereunder, for vertical flue boilers having internal water tubes.

166. **FLUE, VERTICAL, INTERNAL WATER-TUBE.** Vertical flue boilers having water tubes within the flue in communication with the boiler.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 131, Fire tube, Vertical, Water tube, Internal, for vertical water tube boilers with water tubes in the flues; 184 to 187 under Flue, Vertical, Standpipe, Water tube, for vertical flue boilers having a central standpipe provided with water tubes located in the vertical flue; 468, Steam treatment, Flue boiler, Vertical, Internal water tube, Superheater, for boilers of that type having a steam superheater.

167. **FLUE, VERTICAL, INTERNAL WATER-TUBE, FLUID FUEL.** Vertical flue boilers having internal water tubes therein and heated by fluid fuel.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 161, Flue, Vertical, Concentric shell, Fluid fuel; 177, Flue, Vertical, Internal water tube, Transverse, Fluid fuel; 179, Flue, Vertical, Internal water tube, Vertical aligned fire tube, Fluid fuel, and 183, Flue, Vertical, Spiral water conduit, Fluid fuel, for other types of vertical flue boilers heated by fluid fuel.

168. **FLUE, VERTICAL, INTERNAL WATER-TUBE, CENTRAL MAGAZINE.** Vertical flue boilers having water tubes in the flue, with a fuel magazine centrally located in the flue.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 117, Fire tube, Vertical, Central magazine, and 128, Fire tube, Vertical, Water fire box, Central magazine, for vertical fire tube boilers with a central magazine; 158, Fuel, Vertical, Central magazine, Water jacket, and 162, Flue, Vertical, Concentric shell, Central magazine, for vertical flue boilers having a concentrically located water shell or flue within the main flue and having a central fuel magazine.

169. **FLUE, VERTICAL, INTERNAL WATER-TUBE, COIL.** Vertical flue boilers having coiled water tubes within the flue.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 170, Flue, Vertical, Internal water tube, Coil, Header, for coiled water tubes communicating with headers located in the flue; 247, Water tube, Coil, and the subclasses thereunder, for structure of water tubes.

170. **FLUE, VERTICAL, INTERNAL WATER-TUBE, COIL, HEADER.** Vertical boilers having water tubes in the form of coils communicating with headers located within the flue.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 172, Flue, Vertical, Internal water tube, Header, for analogous art; 244, Water tube, Coil or loop, Central standpipe, and the subclasses thereunder, and 247, Water tube, Coil, for structure of water tubes.

171. **FLUE, VERTICAL, INTERNAL WATER-TUBE, CONTRACTED INLET.** Vertical flue boilers having a large vertical flue, with the inlet opening to the flue of smaller diameter than the flue, and having water tubes within the flue. There may or may not be a water fire box below the contracted inlet.

CLASS 122—Continued.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 175, Flue, Vertical, Internal water tube, Offset water fire box, and 179, Flue, Vertical, Internal water tube, Vertical aligned fire tube, Fluid fuel, for similar art.

172. **FLUE, VERTICAL, INTERNAL WATER-TUBE, HEADER.** Miscellaneous vertical flue boilers having water tubes in communication with headers located within the flue.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, the water tube boiler subclasses, for structure of the water tubes; subclasses 170, Flue, Vertical, Internal water tube, Coil, Header, for vertical flue boilers having coiled water tubes communicating with headers located in the flue; 178, Flue, Vertical, Internal water tube, Vertical aligned fire tube, for similar structures of water tubes; 184, Flue, Vertical, Standpipe, Water tube, Annular fire box; 185, Flue, Vertical, Standpipe, Water tube, Loop, and 186, Flue, Vertical, Standpipe, Water tube, Spur, for standpipes provided with water tubes located in vertical flues.

173. **FLUE, VERTICAL, INTERNAL WATER-TUBE, HORIZONTAL SPUR.** Vertical flue boilers having horizontal spur water tubes within the flue.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 133, Fire tube, Vertical, Water tube, Spur, for vertical fire tube boilers with spur water tubes; 180, Flue, Vertical, Internal water tube, Vertical aligned fire tube, Spur water tube, and 181, Flue, Vertical, Internal water tube, Vertical spur, for other types of vertical flue boilers having spur water tubes.

174. **FLUE, VERTICAL, INTERNAL WATER-TUBE, INTERNAL FIRE-TUBE.** Vertical flue boilers having water tubes provided with internal fire tubes located within the flue.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 242, Water tube, Capillary, and 243, Water tube, Capillary, Fluid fuel, for capillary tubes of this type; 266, Water tube, Internal fire tube, and the subclasses thereunder, for structure of water tubes with internal fire tubes; 271, Water tube, Internal fire tube, Vertical, and 348, Water tube, Vertical, Internal fire tube, Fluid fuel, especially for vertical water tubes with internal fire tubes.

175. **FLUE, VERTICAL, INTERNAL WATER-TUBE, OFFSET WATER-FIREBOX.** Vertical flue boilers having water tubes within the flue and provided with an offset water firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 120, Fire tube, Vertical, Offset firebox, for vertical fire tube boilers with offset water fireboxes.

176. **FLUE, VERTICAL, INTERNAL WATER-TUBE, TRANSVERSE.** Vertical flue boilers having water tubes extending transversely across the flue and communicating at both ends with the boiler.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 177, Flue, Vertical, Internal water tube, Transverse, Fluid fuel, for boilers of this type heated by fluid fuel.

177. **FLUE, VERTICAL, INTERNAL WATER-TUBE, TRANSVERSE, FLUID FUEL.** Vertical flue boilers having transverse water tubes and heated by fluid fuel.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 179, Flue, Vertical, Internal water tube, Vertical aligned fire tube, Fluid fuel, and 183, Flue, Vertical, Spiral water conduit, Fluid fuel, for other types of vertical flue boilers heated by fluid fuel.

178. **FLUE, VERTICAL, INTERNAL WATER-TUBE, VERTICAL ALIGNED FIRE-TUBE.** Boilers having a large vertical flue, with water tubes in the flue, and having small fire tubes in alignment with the flue.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 48, Fire tube, Flue, Vertical, and 126, Fire tube, Vertical, Water firebox, for analogous structures in the fire tube art; 179, Flue, Vertical, Internal water tube, Vertical aligned fire tube, Fluid fuel, for boilers of this type heated by fluid fuel; 180, Flue, Vertical, Internal water tube, Vertical aligned fire tube, Spur water tube, for boilers of this type having spur water tubes.

179. **FLUE, VERTICAL, INTERNAL WATER-TUBE, VERTICAL ALIGNED FIRE-TUBE, FLUID FUEL.** Types of boilers, defined in subclass 178 above, which are heated by fluid fuel.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 115, Fire tube, Vertical, Fluid fuel; 167, Flue, Vertical, Internal water tube, Fluid fuel, and 171, Flue, Vertical, Internal water tube, Contracted inlet, for analogous art.

180. **FLUE, VERTICAL, INTERNAL WATER-TUBE, VERTICAL ALIGNED FIRE-TUBE, SPUR WATER-TUBE.** Vertical flue boilers having vertically aligned fire tubes with spur water tubes within the large flue.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 133, Fire tube, Vertical, Water tube, Spur, for vertical fire tube boilers having spur water tubes; 173, Flue, Vertical, Internal water tube, Horizontal spur, and 181, Flue, Vertical, Internal water tube, Vertical spur, for vertical flue boilers having spur water tubes without the vertically aligned fire tubes; 186, Flue, Vertical, Stand pipe, Water tube, Spur, for vertical flue boilers having a spur water tube stand pipe within the flue.

CLASS 122—Continued.

181. **FLUE, VERTICAL, INTERNAL WATER-TUBE, VERTICAL SPUR.** Vertical flue boilers having vertical spur water tubes within the flue.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 133, Fire tube, Vertical, Water tube, Spur, for vertical fire tube boilers, with vertical spur water tubes.

182. **FLUE, VERTICAL, RETURN FIRE-TUBE.** Boilers having large vertical flues or one large vertical flue with small vertical fire tubes, through which the products of combustion pass after leaving the large flues. The fire tubes may be within the same boiler section as the large flue or in a separate boiler section.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 121, Fire tube, Vertical, Return fire tube, and 122, Fire tube, Vertical, Return fire tube, Water firebox, for return fire tube vertical fire tube boilers.

183. **FLUE, VERTICAL, SPIRAL WATER-CONDUIT, FLUID FUEL.** Vertical flue boilers consisting of one or more annular chambers having spiral water passages vertically posited. There may or may not be some kind of water heating conduits within the vertical flues; but there is a fluid fuel burner either disclosed or claimed.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 161, Flue, Vertical, Concentric shell, Fluid fuel; 501, Fluid displacer, and 502, Fluid displacer, Fluid fuel, for related art.

184. **FLUE, VERTICAL, STAND PIPE, WATER-TUBE, ANNULAR FIREBOX.** Vertical boilers having a stand pipe provided with water tubes or merely a vertical pipe extending downwardly within the flue through the fuel grate to form an annular firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 29, Annular firebox, for miscellaneous boilers with an annular fire tube; 127, Fire tube, Vertical, Water firebox, Annular, for vertical fire tube boilers with an annular water firebox.

185. **FLUE, VERTICAL, STAND-PIPE, WATER-TUBE, LOOP.** Vertical flue boilers having a vertical stand pipe, with looped water tubes located within the flue.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 215, Sectional, Horizontal sections, Superimposed, Central connection, and the subclasses thereunder, for similar art in sectional boilers; 244, Water tube, Coil or Loop, Central stand pipe, and the subclasses thereunder, and 231, Water tube, Loop, Over firebox, Stand pipe, for structure of stand pipe and water tubes.

186. **FLUE, VERTICAL, STAND-PIPE, WATER-TUBE SPUR.** Vertical flue boilers having a stand pipe provided with spur water tubes located within the flue.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 184, Flue, Vertical, Stand pipe, Water tube, Annular firebox, for similar structure; 215, Sectional, Horizontal sections, Superimposed, Central connection, and the subclasses thereunder for similar art in sectional boilers; subclass 307, Water tube, Spur, Central stand pipe, and the subclasses thereunder, for spur water tube stand pipe structure.

187. **FLUE, VERTICAL, TRANSVERSE FIRE-TUBE.** Vertical flue boilers having fire tubes extending transversely through the annular water chamber formed by the inner and outer walls of the boiler.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 111, Fire tube, Transverse, Vertical boiler, for vertical boilers with transverse fire tubes extending through the whole boiler.

188. **HORIZONTAL CYLINDER, DROP WATER-Baffle.** Horizontal cylindrical boilers provided with a depending water-cooled baffle for the products of combustion, formed either of plates spaced apart, water tubes, or the combination of either of these with firebrick or some solid material.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 61, Fire tube, Horizontal, Drop water firebox, Drop water baffle, for drop baffles in the water firebox.

189. **HORIZONTAL CYLINDER, OFFSET SUBJACENT FIREBOX, WATER-ROOF.** Horizontal cylindrical boilers having an offset subjacent firebox provided with a water-cooled roof. The firebox in addition to the water roof may also have one or more of its walls water-cooled, thereby forming an offset subjacent water firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 93, Fire tube, Horizontal, Water firebox, Offset, and 94, Fire tube, Horizontal, Water firebox, Offset, Water tube type, for offset water fireboxes for a horizontal fire tube boiler; 190, Horizontal cylinder, Offset subjacent firebox, Water tube, for offset water tube fireboxes; 209, Sectional, and 213, Sectional, Plural firebox; 238, Water tube, Offset firebox; 336, Water tube, Vertical, Offset firebox, and 352, Water tube, Vertical, Plural upper transverse drum, Plural lower transverse drum, Offset firebox, for water tube boilers with offset fireboxes.

190. **HORIZONTAL CYLINDER, OFFSET SUBJACENT FIREBOX, WATER-TUBE.** Horizontal cylindrical boilers having an offset subjacent firebox having water tubes surrounding the fuel space.

CLASS 122—Continued.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 194, Horizontal cylinder, Water firebox, Water tube type.

191. **HORIZONTAL CYLINDER, SUBJACENT FIRE-TUBE, BEYOND BRIDGE-WALL.** Horizontal cylindrical boilers having a subsidiary fire tube section of the boiler beyond the bridge wall. The fire tubes may be either vertical or horizontal, and if horizontal may extend either longitudinally or transversely of the boiler.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 56, Fire tube, Horizontal, Depending fire tube, Rear of bridge wall, 81, Fire tube, Horizontal, Subjacent transverse fire tube; 85, Fire tube, Horizontal, Two diameters, Small diameter over firebox, and 86, Fire tube, Horizontal, Two diameters, Small diameter over firebox, Water firebox, for closely allied structure.

192. **HORIZONTAL CYLINDER, WATER BRIDGE-WALL.** Horizontal cylindrical boilers having a water-cooled bridge wall.

193. **HORIZONTAL CYLINDER, WATER-FIREBOX.** Horizontal cylindrical boilers having a firebox located beneath one end of the boiler and having one or more water walls forming the sides of the firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 58, Fire tube, Horizontal, Drop water firebox, and the subclasses thereunder, and 90, Fire tube, Horizontal, Water firebox, and the subclasses thereunder, for horizontal fire tube boilers with various types of water fireboxes; 139, Flue, Horizontal, Drop water firebox; 141, Flue, Horizontal, Internal water tube, Longitudinal, Drop water firebox, and 146, Flue, Horizontal, Internal water tube, Transverse, Drop water firebox, for horizontal flue boilers with water fireboxes; 188, Horizontal cylinder, Drop water baffle, for drop water baffles; 189, Horizontal cylinder, Offset subjacent firebox, Water roof.

194. **HORIZONTAL CYLINDER, WATER-FIREBOX, WATER-TUBE TYPE.** Horizontal cylindrical boilers having a series of water tubes either embedded in the walls of the firebox or located just inside the walls surrounding the fuel space.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 190, Horizontal cylinder, Offset subjacent firebox, Water tube.

195. **HORIZONTAL CYLINDER, WATER-TUBE.** Horizontal cylindrical boilers having some form of water tubes, water chambers, or drums in communication therewith. The cylindrical boiler may or may not be provided with fire tubes or flues.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 45, Fire tube, Fluid fuel; 47, Fire tube, Flue, Horizontal; 48, Fire tube, Flue, Vertical; 49, Fire tube, Horizontal and Vertical; 50, Fire tube, Horizontal or inclined, Water firebox, Flue, and 51, Fire tube, Horizontal, and the subclasses thereunder, for various types of horizontal fire tube boilers provided with water tubes, water walls, drums, or chambers when the fire tubes are an essential feature in the combination; 136, Flue, Horizontal, and the subclasses thereunder, for horizontal cylindrical boilers having large flues therein and provided with water tubes, water walls, drums, or water heating chambers.

196. **HORIZONTAL CYLINDER, WATER-TUBE, FEED HEATER, CHECK VALVED.** Horizontal cylindrical boilers having water tubes in communication therewith located within the combustion chambers, through which the boiler water circulates and is heated, with check valves so arranged that the feed water when introduced flows through the tubes and is heated therein and is not permitted to enter the boiler directly.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 69, Fire tube, Horizontal, Drop water firebox, Water tube, Feed heater, Check valved, for a similar arrangement of valves.

197. **HORIZONTAL CYLINDER, WATER-TUBE, LATERAL LONGITUDINAL.** Horizontal cylindrical boilers having water tubes located in the combustion chamber and extending longitudinally on the sides thereof.

198. **HORIZONTAL CYLINDER, WATER-TUBE, LATERAL VERTICAL.** Horizontal cylindrical boilers having water tubes within the combustion chamber, arranged vertically on the sides thereof.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 51, Fire tube, Horizontal; 63, Fire tube, Horizontal, Plural, Water tube; 138, Flue, Horizontal, Plural, Water tube; 153, Flue, Horizontal, Water tube, and 199, Horizontal cylinder, Water tube, Lateral vertical, Firebox, for analogous art.

199. **HORIZONTAL CYLINDER, WATER-TUBE, LATERAL VERTICAL, FIREBOX.** Horizontal cylindrical boilers having vertical water tubes on each side of the firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 68, Fire tube, Horizontal, Drop water firebox, Water tube, and 94, Fire tube, Horizontal, Water firebox, Offset, Water tube type, for analogous art.

200. **HORIZONTAL CYLINDER, WATER-TUBE, OVER FUEL GRATE.** Horizontal cylindrical boilers with water tubes over the fuel grate.

CLASS 122—Continued.

201. HORIZONTAL CYLINDER, WATER-TUBE, SUBJACENT INTERNAL FIRE-TUBE. Horizontal cylindrical boilers having water tubes provided with internal fire tubes located in the combustion chamber beneath the boiler.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 267, Water tube, Internal fire tube, Horizontal, and analogous subclasses, for internal fire tubes within the water tubes.

202. HORIZONTAL CYLINDER, WATER-TUBE, TRAPPED CIRCUIT. Horizontal cylindrical boilers having a water tube heating circuit provided with some form of sediment trap in the circuit.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 91, Fire tube, Horizontal, Water firebox, Firebox water heater, Trapped circuit; 398, Cleaning, Trapped circuit, Feeding water, and 404, Cleaning, Trapped circuit, Surface exit, Steam injector, for analogous art.

203. HORIZONTAL CYLINDER, WATER-TUBE, WATER-GRATE, DOWNDRAFT. Horizontal cylindrical boilers having a downdraft water grate located beneath the boiler.

204. HORIZONTAL CYLINDER, WATER-TUBE, WATER-GRATE, INTERMEDIATE DRAFT. Horizontal cylindrical boilers provided with a plurality of fireboxes having fuel grates, at least one of which is a water-cooled grate, so arranged that the products of combustion from the fireboxes meet each other.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 67, Fire tube, Horizontal, Drop water firebox, Water grate, Intermediate draft, and 287, Water tube, Over bridge wall, Water grate, Intermediate draft.

205. HORIZONTAL CYLINDER, WATER-TUBE, WATER-GRATE, MULTIPLE SERIES. Horizontal cylindrical boilers having water tubes in the combustion chambers and a plurality of fire grates, one or more of which are of the water tube type and so arranged that the products of combustion from one grate pass over or through the other grate.

206. HORIZONTAL CYLINDER, WATER-TUBE, WATER-GRATE, SOLID AND WATER BAR. Horizontal cylindrical boilers having water tubes in the combustion chamber and a fuel grate consisting of solid bars and water-cooled bars combined.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 375, Water grate, Grate structure, Solid and water bar, and 377, Water grate, Water firebox, Solid and water bar, Updraft, for grate structure.

207. HORIZONTAL CYLINDER, WATER-TUBE, WATER-GRATE, UPDRAFT. Horizontal cylindrical boilers having an updraft water grate located beneath the boiler.

208. PLATE, ZIGZAG CONDUIT, FLUID FUEL. Boilers consisting of flat plates provided with zigzag passages heated by fluid fuel.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 356, Water tube, Zigzag, Fluid fuel, for zigzag water tube boilers heated by fluid fuel.

209. SECTIONAL. Boilers made of separate parts, not otherwise classifiable.

Note.—Boilers included in the sectional subclasses are generally formed of cast metal sections. Sectional water tube boilers are classified in the water tube subclasses or in fire tube or flue subclasses having combinations of fire tubes or flues with water tubes.

210. SECTIONAL, FLUID FUEL. Sectional boilers heated by fluid fuel.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 23, Fluid fuel, for miscellaneous boilers heated by fluid fuel; 211, Sectional, Fluid or solid fuel, for sectional boilers heated by either solid or fluid fuel.

211. SECTIONAL, FLUID OR SOLID FUEL. Sectional boilers heated by either solid or fluid fuel or both combined.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 22, Fluid and solid fuel, for miscellaneous boilers heated by both solid and fluid fuel.

212. SECTIONAL, MAGAZINE. Sectional boilers having a fuel magazine.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 30, Magazine, for miscellaneous magazine boilers (see the notes thereunder for subclasses of boilers with magazines).

213. SECTIONAL, PLURAL FIREBOX. Sectional boilers having a plurality of fireboxes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 232, Sectional, Water grate, for sectional boilers having a water grate above the main grate for supporting waste material.

214. SECTIONAL, HORIZONTAL SECTIONS, SUPERIMPOSED. Sectional boilers whose sections are superimposed and lie substantially in a horizontal plane.

215. SECTIONAL, HORIZONTAL SECTIONS, SUPERIMPOSED, CENTRAL CONNECTION. Sectional boilers having sections horizontally disposed, the sections being in communication with one another at their centers.

CLASS 122—Continued.

216. SECTIONAL, HORIZONTAL SECTIONS, SUPERIMPOSED, CENTRAL CONNECTION, FLUID FUEL. Sectional boilers having superimposed horizontally disposed sections with a central communication between them and heated by fluid fuel.

217. SECTIONAL, HORIZONTAL SECTIONS, SUPERIMPOSED, CENTRAL CONNECTION, WATER-FIREBOX. Boilers having superimposed horizontal centrally connected sections with a water firebox.

218. SECTIONAL, HORIZONTAL SECTIONS, SUPERIMPOSED, WATER-FIREBOX. Sectional boilers having horizontal superimposed sections with a water firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 217, Sectional, Horizontal sections, Superimposed, Central connection, Water firebox, for horizontal sections centrally connected with a water firebox.

219. SECTIONAL, HORIZONTAL SECTIONS, SUPERIMPOSED, WATER-FIREBOX, CENTRAL MAGAZINE. Sectional boilers having horizontally superimposed sections with a water firebox and a central fuel magazine.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 212, Sectional, Magazine, for miscellaneous sectional boilers with fuel magazines.

220. SECTIONAL, HORIZONTAL SECTIONS, SUPERIMPOSED, WATER-TUBE, INTERNAL FIRE-TUBE, WATER-FIREBOX. Sectional boilers having horizontal superimposed sections having water tubes provided with internal fire tubes, with a water firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 266, Water tube, Internal fire tube, and the subclasses thereunder, for water tube boilers having internal fire tubes.

221. SECTIONAL, VERTICAL SECTIONS, ANNULARLY POSITED. Sectional boilers having vertically disposed sections around the combustion chamber.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 222, Sectional, Vertical sections, Annularly posited, Central magazine, for the same arrangement of sections with a centrally disposed fuel magazine.

222. SECTIONAL, VERTICAL SECTIONS, ANNULARLY POSITED, CENTRAL MAGAZINE. Sectional boilers having vertically disposed sections around the combustion chamber, with a centrally disposed fuel magazine.

223. SECTIONAL, VERTICAL SECTIONS, LONGITUDINALLY POSITED. Sectional boilers having vertical sections extending longitudinally of the boiler.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 224, Sectional, Vertical sections, Longitudinally posited, Casing, for similar art with an inclosing casing.

224. SECTIONAL, VERTICAL SECTIONS, LONGITUDINALLY POSITED, CASING. Sectional boilers, having vertical sections longitudinally placed in the boiler structure and having an inclosing casing spaced apart from the sections to allow passage for the products of combustion around the sections.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 223, Sectional, Vertical sections, Longitudinally posited, for similar structure without an inclosing casing.

225. SECTIONAL, VERTICAL SECTIONS, TRANSVERSELY POSITED. Sectional boilers having sections vertically placed transversely of the boiler. A plane cutting the section and lying therein would be vertical and at right angles to the general course of the products of combustion.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 226, Sectional, Vertical sections, Transversely posited, Casing, and 227, Sectional, Vertical sections, Transversely posited, Casing, Divided section, for special features of this type of boiler having an inclosing casing; 229, Sectional, Vertical sections, Transversely posited, Water grate, for boilers of this type with water grates.

226. SECTIONAL, VERTICAL SECTIONS, TRANSVERSELY POSITED, CASING. Sectional boilers having vertical sections made in two parts arranged transversely of the boiler, with an inclosing casing, so that the products of combustion come into contact with the outer edges of the sections.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 227, Sectional, Vertical sections, Transversely posited, Casing, Divided section, for the same general structure with a casing where the sections are made in two parts; 345, Water tube, Vertical, Beyond bridge wall, for similar art in water tube boilers.

227. SECTIONAL, VERTICAL SECTIONS, TRANSVERSELY POSITED, CASING, DIVIDED SECTION. Sectional boilers having two-part vertical sections transversely arranged, with a casing around the sections and spaced therefrom.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 226, Sectional, Vertical sections, Transversely posited, Casing, for similar structure when the sections are made in one part.

CLASS 122—Continued.

228. SECTIONAL, VERTICAL SECTIONS, TRANSVERSELY POSITED, DIVIDED SECTION. Vertical sectional boilers whose sections are made in two parts and posited transversely of the boiler.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 227, Sectional, Vertical sections, Transversely posited, Casing, Divided section, for boilers of this type having an inclosing casing.

229. SECTIONAL, VERTICAL SECTIONS, TRANSVERSELY POSITED, WATER-GRATE. Sectional boilers having vertical sections arranged transversely of the boiler and provided with a water grate.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 232, Sectional, Water grate, for miscellaneous sectional boilers with water grates.

230. SECTIONAL, VERTICAL SECTIONS, TWO-SECTION. Sectional boilers consisting of only two vertical sections.

231. SECTIONAL, ACCESSORIES. Specific parts of sectional boilers, such as joints, fireboxes, ashpits, etc.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 360, Water tube, Headers, Closures and couplings, 511, Tubes and connections, and the search notes thereunder, and 137, WATER DISTRIBUTION, generally, for packing and gaskets.

121—STEAM ENGINES, subclass 110, Packing, Steam-joint.

232. SECTIONAL, WATER-GRATE. Miscellaneous sectional boilers having a water grate.

Search class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 229, Sectional, Vertical sections, Transversely posited, Water grate, for sectional boilers having a water grate; 371, Water grate, for miscellaneous boilers with water grates, and see the list of subclasses thereunder of boilers with water grates.

233. TANK, HORIZONTAL. Boilers consisting of a horizontally disposed closed chamber.

Note.—This subclass includes the combination of such a closed chamber with the furnace walls. Patents claiming a closed tank or receptacle, whether used as a boiler or for other purposes, are classified in class 220, METALLIC SHIPPING AND STORING VESSELS, subclass 125, Tanks.

234. TANK, VERTICAL. Boilers consisting of a closed chamber vertically disposed, in combination with means for heating it.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclass 13, Stand boiler, and the subclasses thereunder, for stand boilers having heating furnaces or burners; 126, Stoves and Furnaces, subclass 361, Water heaters, Stand boilers, for stand boiler tank structures.

220—METALLIC SHIPPING AND STORING VESSELS, subclass 125, Tanks, for tank structure.

235. WATER-TUBE. Miscellaneous boilers whose heating surface consists substantially of tubes, through which the water circulates or passes while being heated.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 11, Rotary, for rotary water tube boilers; 42, Fire and water tube; 476, Steam treatment, Water tube boiler, Superheater, and 477, Steam treatment Water tube boiler, Superheater and feed-heater, for combined fire and water tube boilers of a miscellaneous character; the various subclasses under fire tube or flue boilers and horizontal cylindrical boilers provided with water tubes for those types of boilers, and especially 68, Fire tube, Horizontal, Drop water firebox, Water tube, 69, Fire tube, Horizontal, Drop water firebox, Water tube, Feed heater, Check valve; 113, Fire tube, Transverse, Water tube, 140, Flue, Horizontal, Internal water tube, 153, Flue, Horizontal, Water tube, 166, Flue, Vertical, Internal water tube, and the subclasses thereunder, and 195, Horizontal cylinder, Water tube; 459, Steam treatment, for water tube boilers with superheaters.

110—FURNACES, subclass 98, Furnace structure, Baffles and heat retainers, Water tube boilers.

236. WATER-TUBE, FLUID FUEL. Miscellaneous water tube boilers heated by fluid fuel.

Note.—The following is a complete list of water tube boilers heated by fluid fuel. It does not contain the combination of water tube and fire tube or flue types of boilers heated by fluid fuel:

Flasher—	Water-tube—
41. Fluid fuel.	Spur—
Water-tube—	Central stand pipe—
Capillary—	308. Fluid fuel,
243. Fluid fuel,	Vertical—
Coil or loop—	319. Fluid fuel,
Central stand pipe—	Stand pipe—
245. Fluid fuel,	322. Fluid fuel,
Coil—	Straddle—
Horizontal—	Single upper drum—
248. Fluid fuel,	Plural lower
Vertical—	drum—
250. Fluid fuel,	328. Fluid fuel,
Longitudinal upper	Vertical—
drum—	333. Fluid fuel,
274. Fluid fuel,	Internal fire tube—
Loop—	348. Fluid fuel,
Over firebox—	Zigzag—
Vertical—	356. Fluid fuel.
283. Fluid fuel,	

CLASS 122—Continued.

237. WATER-TUBE, MAGAZINE. Water tube boilers provided with fuel magazines, not otherwise classifiable.

Note.—The following is a full list of water tube boilers with a fuel magazine:

Water-tube—	Water-tube—
Coll—	Vertical—
251. Central magazine,	334. Side magazine,
Internal fire tube—	Annular lower
Vertical—	drum—
272. Central magazine,	Annular upper
Spur—	drum—
310. Central stand pipe—	339. Central magazine,
Central magazine,	Upper drum—
Vertical—	344. Central magazine.
320. Central magazine,	

238. WATER-TUBE, OFFSET FIREBOX. Water tube boilers having a firebox offset from the main part of the boiler structure that do not fall within the definitions of the other subclasses of water tube boilers having an offset firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 93, Fire tube, Horizontal, Water firebox, Offset, 94, Fire tube, Horizontal, Water firebox, Offset, Water tube type, 120, Fire tube, Vertical, Offset firebox, 175, Flue, Vertical, Internal water tube, Offset water firebox, 189, Horizontal cylinder, Offset subjacent firebox, Water roof, 190, Horizontal cylinder, Offset subjacent firebox, Water tube, 209, Sectional, and 213, Sectional, Plural firebox, for other types of boilers provided with offset fireboxes; 336, Water tube, Vertical, Offset firebox; 337, Water tube, Vertical, Offset firebox, Elevated, and 352, Water tube, Vertical, Plural upper transverse drum, Plural lower transverse drum, Offset firebox, for other types of water tube boilers with offset fireboxes.

239. WATER-TUBE, SUPERIMPOSED FIREBOX. Water tube boilers having a plurality of superimposed fireboxes.

Note.—The following is a list of subclasses containing boilers with fireboxes or fluid fuel burners superimposed one above the other:

Plants—	Horizontal cylinder—
2. Garbage.	Water-tube—
Fluid-fuel—	Water grate—
Plural burner—	205. Multiple series.
25. Superimposed.	Sectional—
Fire-tube—	Horizontal sections—
Horizontal—	214. Superimposed.
Drop water firebox—	Water-tube—
Water grate—	240. Plural firebox.
67. Intermediate	Water-grate—
draft.	Plural firebox—
Horizontal cylinder—	Superimposed—
Water tube—	Water grate—
204. Water grate—	372. Upright.
Intermediate draft.	

240. WATER-TUBE, PLURAL FIREBOX. Water tube boilers having a plurality of fireboxes not otherwise provided for.

Note.—The following is a list of subclasses where water tube boilers of various types with plural fireboxes may be found:

Water-tube—	Water-tube—
Over bridge wall—	Separate banks—
Water grate—	304. Opposite fireboxes,
287. Intermediate draft,	Straddle—
Rearwardly declined—	Single upper drum—
Over bridge wall—	Plural lower
Front and rear	drum—
header—	330. Plural firebox.
Horizontal longi-	
tudinal drum—	
294. Water wall,	

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 23, Fluid fuel, for other types of fluid-fuel burners; 25, Fluid fuel, Plural burner, Superimposed, for boilers heated by a plurality of superimposed fluid-fuel burners; 53, Fire tube, Horizontal, Plural, Water tube, 138, Flue, Horizontal, Plural, Water tube, 204, Horizontal cylinder, Water tube, Water grate, Intermediate draft, and 205, Horizontal cylinder, Water tube, Water grate, Multiple series, for other types of boilers having water tubes and a plurality of fireboxes.

241. WATER-TUBE, FIREBOX IN DRUM. Water tube boilers having a drum, within which the firebox is located.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 50, Fire tube, Horizontal or inclined, Water firebox, Flue; 80, Fire tube, Horizontal, Subjacent flue, for analogous art.

242. WATER-TUBE, CAPILLARY. Boilers provided with water tubes whose passages have an extremely small cross-sectional area as compared with the length of the tubes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 39, Film, for boilers whose water is heated by passing over the heating surface in a thin film; 40, Flasher; 41, Flasher, Fluid fuel, and 502, Fluid displacer, Fluid fuel; 260, Water tube, Flat, for flat tube boilers; 501, Fluid displacer, for water tubes containing a displacing element, that renders the tube similar in action to a capillary tube.

CLASS 122—Continued.

243. **WATER-TUBE, CAPILLARY, FLUID FUEL.** Water tube boilers having capillary tubes and heated by fluid fuel.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 41, Flasher, Fluid fuel, and 39, Film, for analogous art; 260, Water tube, Flat, for flat tubes; 348, Water tube, Vertical, Internal fire tube, Fluid fuel, for vertical water tube boilers having internal fire tubes; 502, Fluid displacer, Fluid fuel, for displacing elements within the tube.

244. **WATER-TUBE, COIL OR LOOP, CENTRAL STAND-PIPE.** Water tube boilers consisting of a vertical stand pipe, around which extends coils or loops of tubes in either direct or indirect communication with the stand pipe.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 132, Fire tube, Vertical, Water tube, Radial loop, for vertical fire tube boilers provided with radial loops; 133, Fire tube, Vertical, Water tube, Spur, for vertical fire tube boilers provided with radial spurs; 169, Flue, Vertical, Internal water tube, Coil, and 170, Flue, Vertical, Internal water tube, Coil, Header, for similar structure located within a vertical flue; 185, Flue, Vertical, Stand pipe, Water tube, Loop, for vertical stand pipes provided with radial loops located in a vertical flue; 186, Flue, Vertical Stand pipe, Water tube, Spur, for stand pipes provided with radial spur tubes located within a vertical flue; 245, Water tube, Coil or loop, Central stand pipe, Fluid fuel, and 246, Water tube Coil or loop, Central stand pipe, Annular firebox for analogous art; 281, Water tube, Loop, Over firebox, Stand pipe, for stand pipes provided with loops over a firebox; 307, Water tube, Spur, Central stand pipe, and the subclasses thereunder, for central standpipes provided with spur tubes; 323, Water tube, Stand pipe, Annular firebox, for miscellaneous water tube boilers with central stand pipes.

245. **WATER-TUBE, COIL OR LOOP, CENTRAL STAND-PIPE, FLUID FUEL.** Water tube boilers consisting of a central stand pipe surrounded by coiled or looped tubes in either direct or indirect communication with the stand pipe and heated by fluid fuel.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 281, Water tube, Loop, Over firebox, Stand pipe, and 283, Water tube, Loop, Over firebox, Vertical, Fluid fuel, for analogous art; 308, Water tube, Spur, Central stand pipe, Fluid fuel, for water tube boilers provided with a central stand pipe having radial spur tubes and heated by fluid fuel; 322, Water tube, Stand pipe, Fluid fuel, for miscellaneous central stand pipe water tube boilers heated by fluid fuel.

246. **WATER-TUBE, COIL OR LOOP, CENTRAL STAND-PIPE, ANNULAR FIREBOX.** Water tube boilers consisting of a central stand pipe extending below the grate and forming an annular firebox and having coiled or looped water tubes surrounding the stand pipe, in either direct or indirect communication therewith.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 184, Flue, Vertical, Stand pipe, Water tube, Annular firebox, for a stand pipe, provided with water tubes located in a vertical flue boiler and having an annular firebox; 309, Water tube, Spur, Central stand pipe, Annular firebox, for water tube boilers provided with a central stand pipe having spur tubes and an annular firebox; 323, Water tube, Stand pipe, Annular firebox, for miscellaneous water tube boilers provided with a standpipe and an annular firebox; 335, Water tube, Vertical, Annular firebox, for miscellaneous water tube boilers with an annular firebox.

247. **WATER-TUBE, COIL.** Water tube boilers provided with coils of tubes not coming within the definitions of other subclasses covering water tube boilers of the coil type.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 169, Flue, Vertical, Internal water tube, Coil, and 170, Flue, Vertical, Internal water tube, Coil, Header, for vertical coiled water tubes located within a vertical flue; 244, Water tube, Coil or loop, Central stand pipe, and the subclasses thereunder, 248, Water tube, Coil, Horizontal, Fluid fuel, and 249, Water tube, Coil, Vertical, and the subclasses thereunder, for various types of coil tube boilers; 355, Water tube, Zigzag, and the subclasses thereunder, for analogous water tube boilers incorrectly said to be coil boilers.

248. **WATER-TUBE, COIL, HORIZONTAL, FLUID FUEL.** Water tube boilers having one or more coils of tubes heated by a fluid fuel burner, the axes of the coils being horizontal.

249. **WATER-TUBE, COIL, VERTICAL.** Water tube boilers having one or more coils of tubes, the axes of the coils being vertical.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 169, Flue, Vertical, Internal water tube, Coil, and 170, Flue, Vertical, Internal water tube, Coil, Header, for vertical flue boilers provided with internal water tube coils; 183, Flue, Vertical, Spiral water conduit, Fluid fuel.

250. **WATER-TUBE, COIL, VERTICAL, FLUID FUEL.** Water tube boilers provided with coiled tubes heated by fluid fuel, the axes of the coils being vertical.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 169, Flue, Vertical, Internal water tube, Coil; 170, Flue, Vertical, Internal water tube, Coil, Header, and 183, Flue, Vertical, Spiral water conduit, Fluid fuel, for vertical flue boilers having internal coils.

CLASS 122—Continued.

251. **WATER-TUBE, COIL, VERTICAL, CENTRAL MAGAZINE.** Water tube boilers having coils of tubes with vertical axes and a central fuel magazine.

252. **WATER-TUBE, COIL, VERTICAL, WATER-FIREBOX.** Water tube boilers having coils of tubes with vertical axes and provided with a water firebox.

253. **WATER-TUBE, CROSS.** Water tube boilers whose tubes are so arranged as to cross one another and includes cross tube boilers that are not specially provided for by other subclass definitions.

Note.—There is a close analogy between the cross loop type and the zigzag and the cross tube type of water tube boilers.

Note.—The following is a list of subclasses including different types of boilers provided with cross water tubes:

Flue—	Water-tube—
Horizontal—	Cross—
Internal water tube	Transverse—
145. Transverse—	Header—
146. Drop water fire-	257. Drum,
box,	Loop—
147. Return fire tube,	Over firebox—
Vertical—	278. Cross,
Internal water tube—	Spur—
176. Transverse—	311. Cross,
177. Fluid fuel.	Straddle—
Water-tube—	Plural upper drum—
253. Cross—	Plural lower
254. Over bridge wall,	drum—
Over firebox—	326. Cross,
Longitudinal—	Single upper drum—
Header—	Plural lower
255. Drum,	drum—
Transverse—	329. Cross.
Header—	
256. Drum.	

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 99, Fire tube, Horizontal, Water firebox, Water tube, Straddle, and 355, Water tube, Zigzag, and the subclasses thereunder.

254. **WATER-TUBE, CROSS, OVER BRIDGE WALL.** Water tube boilers provided with water tubes inclined in opposite directions over the bridge wall.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 277, Water tube, Loop, Over bridge wall; 357, Water tube, Zigzag, Over bridge wall, Longitudinal drum, and 358, Water tube, Zigzag, Over bridge wall, Transverse drum.

255. **WATER-TUBE, CROSS, OVER FIREBOX, LONGITUDINAL, HEADER, DRUM.** Water tube boilers having banks of water tubes over the firebox, inclined in opposite directions longitudinally of the boiler and crossing each other, and each bank of tubes being in communication with headers at each end, which headers are in turn in either direct or indirect communication with one or more drums.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 278, Water tube, Loop, Over firebox, Cross, for the crossed loop type of water tube boiler.

256. **WATER-TUBE, CROSS, OVER FIREBOX, TRANSVERSE, HEADER, DRUM.** Water tube boilers provided with banks of water tubes crossing each other, each bank of tubes being in communication with headers at each end, which in turn are in communication with a drum above the tubes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 278, Water tube, Loop, Over firebox, Cross, for the crossed loop type of boiler.

257. **WATER-TUBE, CROSS, TRANSVERSE, HEADER, DRUM.** Water tube boilers having banks of water tubes crossing each other transversely of the boiler, each tube being in communication with headers at each end, which headers are in either direct or indirect communication with a drum located above the water tubes.

258. **WATER-TUBE, DOWN FLOW.** Water tube boilers provided with means for causing a downward flow of water in the tubes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 39, Film, for analogously operating boilers; 209, Sectional, and 218, Sectional, Horizontal sections, Superimposed, Water firebox, for sectional boilers with a down flow of water through the sections.

259. **WATER-TUBE, DRUM TYPE.** Boilers composed of very large tubes or drums.

260. **WATER-TUBE, FLAT.** Water tube boilers having flat tubes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 39, Film, 40, Flasher; 41, Flasher, Fluid fuel; 242, Water tube, Capillary, and 243, Water tube, Capillary, Fluid fuel.

261. **WATER-TUBE, FLAT, VOLUTE.** Water tube boilers having flat tubes coiled about a central axis, each winding being spaced apart.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclass 134, Fire tube, Volute, for volute fire tube boilers.

CLASS 122—Continued.

62—REFRIGERATION, the subclasses under Heat transferers and conservers, (30, 31, 32); 126, STOVES AND FURNACES, subclass 183, Heating drums, and the subclasses thereunder, and 237, HEAT DISTRIBUTING SYSTEMS, subclass 18, Steam radiators, for analogous structure.

262. WATER-TUBE, HORIZONTAL. Horizontal water tube boilers that do not fall within the definitions of other subclasses.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 102, Fire tube, Horizontal, Water tube, Horizontal, Over bridge wall, for horizontal fire tube boilers having horizontal water tubes over the bridge wall; 197, Horizontal cylinder, Water tube, Lateral longitudinal; 201, Horizontal cylinder, Water tube, Subjacent internal fire tube, and the subclasses under Horizontal cylinder, Water tube, Water grate, for horizontal cylindrical boilers provided with horizontal water tubes; 236, Water tube, Fluid fuel, for horizontal water tube boilers heated by fluid fuel, except the zigzag type noted in the other notes; 267, Water tube, Internal fire tube, Horizontal, for horizontal tubes provided with internal fire tubes; 279, Water tube, Loop, Over firebox, Horizontal, for horizontally disposed looped tubes; 285, Water tube, Over bridge wall, Transverse water baffle; 286, Water tube, Over bridge wall, Water grate, Downdraft; 287, Water tube, Over bridge wall, Water grate, Intermediate draft; 289, Water tube, Over firebox, Water grate, Updraft, and 354, Water tube, Water grate, Downdraft, for horizontal water tube boilers with water grates; 316, Water tube, Spur, Over firebox, Horizontal, for horizontal spur tubes over the firebox; 353, Water tube, Water grate.

263. WATER-TUBE, HORIZONTAL, OVER BRIDGE-WALL. Water tube boilers having horizontally disposed water tubes over the bridge wall.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 102, Fire tube, Horizontal, Water tube, Horizontal, Over bridge wall, for horizontal fire tube boilers having horizontal water tubes over the bridge wall; also the subclasses noted under the preceding subclass (262).

264. WATER-TUBE, HORIZONTAL, OVER FIREBOX. Water tube boilers having water tubes horizontally disposed over the firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 236, Water tube, Fluid fuel; 258, Water tube, Down flow, and 316, Water tube, Spur, Over firebox, Horizontal, and especially the subclasses noted under subclass 262.

265. WATER-TUBE, INCLINED. Water tube boilers not otherwise classifiable having water tubes inclined from a vertical or a horizontal line.

Note.—The following is a list of subclasses of water tube boilers having inclined or declined tubes in which all patents that fall within their definitions are classified, and only those miscellaneous water tube boilers with inclined tubes are placed in this subclass (265):

- 244, Water-tube, Coil or loop, Central stand pipe, and the subclasses thereunder.
 - 253, Water-tube, Cross, and the subclasses thereunder.
 - 266, Water-tube, Internal fire tube, and the subclasses thereunder.
 - 275, Water-tube, Loop, and the subclasses thereunder.
 - 305, Water-tube, Spur, and the subclasses thereunder.
 - 324, Water-tube, Straddle, and the subclasses thereunder.
 - 355, Water-tube, zigzag, and the subclasses thereunder, for inclined zigzag water tubes.
- Under Water-tube, Rearwardly declined, 290 to 302.

266. WATER-TUBE, INTERNAL FIRE-TUBE. Water-tube boilers provided with water tubes within which there is a fire tube forming an annular water space.

Note.—The following is a complete list of all subclasses containing patents in which this type of water tube forms a part of the boiler structure:

- | | |
|---|---|
| <p>Flue—</p> <p>Vertical—</p> <p>165. Internal water-heater,</p> <p>Internal water-tube—</p> <p>174. Internal fire-tube—</p> <p>Horizontal cylinder—</p> <p>Water tube—</p> <p>201. Subjacent internal fire-tube.</p> <p>Sectional—</p> <p>Horizontal sections—</p> <p>Superimposed—</p> <p>Water-tube—</p> <p>Internal fire tube—</p> <p>220. Water fire-box.</p> | <p>Water-tube—</p> <p>Internal fire-tube—</p> <p>266. Horizontal,</p> <p>Inclined,</p> <p>269. Plural fire-tube,</p> <p>270. Straddle,</p> <p>271. Vertical—</p> <p>272. Central magazine,</p> <p>348. Fluid fuel.</p> |
|---|---|

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 242, Water tube, Capillary, and 243, Water tube, Capillary, Fluid fuel, for capillary tubes constructed in this manner.

267. WATER-TUBE, INTERNAL FIRE-TUBE, HORIZONTAL. Water tube boilers whose water tubes are horizontally disposed and provided with internal fire tubes.

268. WATER-TUBE, INTERNAL FIRE-TUBE, INCLINED. Water-tube boilers provided with inclined water tubes having fire tubes within the water tubes, and includes patents for inclined water tube boilers provided with internal fire tubes not covered by the definitions of subclasses 269 and 270.

CLASS 122—Continued.

269. WATER-TUBE, INTERNAL FIRE-TUBE, PLURAL FIRE-TUBE. Water tube boilers whose water tubes have a plurality of fire tubes within them.

270. WATER-TUBE, INTERNAL FIRE TUBE, STRADDLE. Water-tube boilers consisting of banks of water tubes provided with internal fire tubes inclined toward each other over the combustion chamber or firebox. The tubes are generally provided with headers at top and bottom, and the headers may be in communication with drums extending longitudinally of the boiler.

271. WATER-TUBE, INTERNAL FIRE-TUBE, VERTICAL. Water-tube boilers of the internal fire tube type whose tubes are in a substantially vertical position.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 348, Water tube, Vertical, Internal fire tube, Fluid fuel, for that type of boiler heated by fluid fuel.

272. WATER-TUBE, INTERNAL FIRE-TUBE, VERTICAL, CENTRAL MAGAZINE. Water tube boilers consisting of vertical water tubes provided with internal fire tubes and having a centrally disposed fuel magazine.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 339, Water tube, Vertical, Annular lower drum, Annular upper drum, Central magazine, for vertical water tube boilers provided with a centrally disposed fuel magazine when the water tubes do not contain fire tubes.

273. WATER-TUBE, LONGITUDINAL UPPER DRUM. Water tube boilers having an upper longitudinal drum with miscellaneous types of water tubes communicating therewith not provided for in the definitions of other water tube boiler subclasses.

Note.—The following is a list of water tube boiler subclasses containing water tube boilers having a longitudinal upper drum:

- | | |
|--|--|
| <p>Water-tube—</p> <p>Longitudinal upper drum—</p> <p>274. Fluid fuel,</p> <p>Rearwardly declined—</p> <p>Over bridge wall—</p> <p>Front and rear header—</p> <p>291. Horizontal longitudinal drum—</p> <p>292. Firebox tube,</p> <p>293. Longitudinal water baffle,</p> <p>294. Water wall,</p> <p>Over firebox—</p> <p>Front and rear header—</p> <p>298. Horizontal longitudinal drum,</p> | <p>Water-tube—</p> <p>Spur—</p> <p>312. Horizontal longitudinal drum,</p> <p>Vertical—</p> <p>Beyond bridge wall—</p> <p>Gas return,</p> <p>Longitudinal upper drum—</p> <p>347. Longitudinal lower drum—</p> <p>Plural upper longitudinal drum—</p> <p>351. Plural lower longitudinal drum,</p> <p>Zigzag—</p> <p>Over bridge wall—</p> <p>357. Longitudinal drum.</p> |
|--|--|

Note.—When the horizontal drum is provided with fire tubes or fire flues, the boiler is then classified in the subclasses of horizontal fire tube or flue boilers.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, the subclasses under looped tube, coiled tube, and straddle tube boilers, for those types of water tube boilers.

274. WATER-TUBE, LONGITUDINAL UPPER DRUM, FLUID FUEL. Water tube boilers having a longitudinal upper drum provided with water tubes and heated by fluid fuel.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 250, Water tube, Coil, Vertical, Fluid fuel, 283, Water tube, Loop, Over firebox, Vertical, Fluid fuel, 328, Water tube, Straddle, Single upper drum, Plural lower drum, Fluid fuel, 348, Water tube, Vertical, Internal fire tube, Fluid fuel, and 356, Water tube, Zigzag, Fluid fuel, for analogous art; 331, Water tube, Transverse horizontal drum, for transverse horizontal drum boilers.

275. WATER-TUBE, LOOP. Miscellaneous water tube boilers whose tubes are in the form of loops.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 132, Fire tube, Vertical, Water tube, Radial loop, and 185, Flue, Vertical, Stand pipe, Water tube, Loop, for other types of boilers provided with looped water tubes; 244, Water tube, Coil or loop, Central stand pipe, and the subclasses thereunder, for boilers of the water tube type having either looped or coiled tubes or both combined; 355, Water tube, Zigzag, and the subclasses thereunder, for analogous structures.

276. WATER-TUBE, LOOP, FIREBOX INCLOSING. Water tube boilers having water tubes in the form of loops and a fire box located within the loops.

277. WATER-TUBE, LOOP, OVER BRIDGE WALL. Water tube boilers having water tubes in the form of loops extending over the bridge wall.

278. WATER-TUBE, LOOP, OVER FIREBOX, CROSS. Water tube boilers having looped water tubes crossing each other over the firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 311, Water tube, Spur, Cross, for crossed spur water tubes over the firebox; 355, Water tube, Zigzag, for crossed zigzag tubes.

CLASS 122—Continued.

279. **WATER-TUBE, LOOP, OVER FIREBOX, HORIZONTAL.** Water tube boilers having looped water tubes extending over the firebox, the axes of the loops being substantially horizontal.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 316, Water tube, Spur, Over firebox, Horizontal, for similar boilers whose tubes are of the spur type.

280. **WATER-TUBE, LOOP, OVER FIREBOX, REAR OF BRIDGE WALL, BRIDGE WALL HEADER.** Water tube boilers having one or more headers vertically posited at the bridge wall, provided with looped tubes extending over and in rear of the firebox or only in the rear thereof.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 306, Water tube, Spur, Bridge wall header, for similarly constructed water tube boilers provided with spur tubes.

281. **WATER-TUBE, LOOP, OVER FIREBOX, STAND PIPE.** Water tube boilers having a stand pipe provided with looped tubes over the firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 132, Fire tube, Vertical, Water tube, Radial loop, for vertical fire tube boilers provided with looped water tubes; 185, Flue, Vertical, Stand pipe, Water tube, Loop, for vertical flue boilers having a looped tube stand pipe; 244, Water tube, Coil or loop, Central stand pipe, and the subclasses thereunder; 308, Water tube, Spur, Central stand pipe, Fluid fuel, and 309, Water tube, Spur, Central stand pipe, Annular firebox, for spur tube boilers having a stand pipe, with tubes over the firebox.

282. **WATER-TUBE, LOOP, OVER FIREBOX, VERTICAL.** Water tube boilers having looped tubes over the firebox, the axis and plane of the loops being substantially vertical.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 318, Water tube, Spur, Vertical; 359, Water tube, Zigzag, Over firebox.

283. **WATER-TUBE, LOOP, OVER FIREBOX, VERTICAL, FLUID FUEL.** Water tube boilers having loops located over a fluid fuel burner or firebox, the axis of the loops being substantially vertical.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 319, Water tube, Spur, Vertical, Fluid fuel, for similar boilers having spur tubes; 356, Water tube, Zigzag, Fluid fuel.

284. **WATER-TUBE, OVER BRIDGE-WALL, HEADERS AT RIGHT ANGLES.** Water tube boilers having water tubes extending over the bridge wall and in communication with headers at each end, which are substantially at right angles to each other.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 288, Water tube, Over firebox, Headers at right angles.

285. **WATER-TUBE OVER BRIDGE-WALL, TRANSVERSE WATER-BAFFLE.** Water tube boilers having banks of water tubes substantially parallel extending over the bridge wall and having a transverse water baffle for the products of combustion.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 280, Water tube, Loop, Over firebox, Rear of bridge wall, Bridge wall header, and 306, Water tube, Spur, Bridge wall header, for analogous art; 293, Water tube, Rearwardly declined, Over bridge wall, Front and rear header, Horizontal longitudinal drum, Longitudinal water baffle, for water tube boilers with longitudinal water baffles between the tubes.

286. **WATER-TUBE OVER BRIDGE-WALL, WATER-GRATE, DOWNDRAFT.** Water tube boilers having water tubes extending over the bridge wall and provided with a downdraft water grate.

287. **WATER-TUBE, OVER BRIDGE WALL, WATER-GRATE, INTERMEDIATE DRAFT.** Water tube boilers having water tubes extending over the bridge wall and a plurality of fireboxes, the products of combustion from one firebox meeting those from the other firebox and the fuel grate of at least one firebox being of the water grate type.

Note.—The firebox with the water grate is generally located above the other firebox and the draft is down through the water grate.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 67, Fire tube, Horizontal, Drop water firebox, Water grate, Intermediate draft, and 204, Horizontal cylinder, Water tube, Water grate, Intermediate draft, for other types of boilers having intermediate draft water grates.

288. **WATER-TUBE, OVER FIREBOX, HEADERS AT RIGHT ANGLES.** Water tube boilers having water tubes located over the firebox and communicating with headers at each end at right angles with each other.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 284, Water tube, Over bridge wall, Headers at right angles, for similar art.

289. **WATER-TUBE, OVER FIREBOX, WATER-GRATE, UPDRAFT.** Water tube boilers having water tubes over the firebox and with an updraft water grate.

CLASS 122—Continued.

290. **WATER-TUBE, REARWARDLY DECLINED, OVER BRIDGE-WALL, FRONT AND REAR HEADER.** Water tube boilers having banks of water tubes rearwardly declined over the bridge wall and being in communication with a front header or drum and a rear header or drum.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 297, Water tube, Rearwardly declined, Over bridge wall, Front and rear header, Transverse drum, for analogous structure; 265, Water tube, Inclined; 331, Water tube, Transverse horizontal drum, and 474, Steam treatment, Water tube boiler, Over bridge wall, Superheater.

291. **WATER-TUBE, REARWARDLY DECLINED, OVER BRIDGE-WALL, FRONT AND REAR HEADER, HORIZONTAL LONGITUDINAL DRUM.** Water tube boilers having banks of substantially parallel water tubes rearwardly declined over the bridge wall and in communication with front and rear headers, which in turn are either in direct or indirect communication with one or more horizontally and longitudinally posited elevated drums.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 104, Fire tube, Horizontal, Water tube, Rearwardly declined, Over bridge wall; 268, Water tube, Internal fire tube, Inclined; 295, Water tube, Rearwardly declined, Over bridge wall, Front and rear header, Internal water tube; 472, Steam treatment, Water tube boiler, Declined over bridge wall, Front and rear header, Longitudinal drum, Superheater, and 473, Steam treatment, Water tube boiler, Longitudinal drum, Superheater, and 110, FURNACES, subclass 98, Furnace structure, Baffles and heat retainers, Water tube boilers, for allied art.

292. **WATER-TUBE, REARWARDLY DECLINED, OVER BRIDGE-WALL, FRONT AND REAR HEADER, HORIZONTAL LONGITUDINAL DRUM, FIREBOX TUBE.** Types of boilers defined in subclass 291 above and having heating tubes extending over, through, or around the firebox, forming distinct circulation and heating conduits from the main banks of tubes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 407, Circulation, Injector.

293. **WATER-TUBE, REARWARDLY DECLINED, OVER BRIDGE-WALL, FRONT AND REAR HEADER, HORIZONTAL LONGITUDINAL DRUM, LONGITUDINAL WATER-BAFFLE.** Types of boilers defined in subclass 291 above and having water baffles extending longitudinally of the water tubes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 285, Water tube, Over bridge wall, Transverse water baffle.

294. **WATER-TUBE, REARWARDLY DECLINED, OVER BRIDGE-WALL, FRONT AND REAR HEADER, HORIZONTAL LONGITUDINAL DRUM, WATER-WALL.** Boilers, such as those defined in subclass 291 above, provided with water walls on two or more sides of the combustion chamber, consisting of metal sheets spaced apart or formed of water tubes. There may or may not be cross water tubes extending through the combustion chamber.

295. **WATER-TUBE, REARWARDLY DECLINED, OVER BRIDGE-WALL, FRONT AND REAR HEADER, INTERNAL WATER-TUBE.** Water tube boilers provided with banks of water tubes rearwardly declined over the bridge wall and connected to front and rear headers, the tubes having within them and spaced therefrom smaller tubes communicating with separate compartments of the headers, and such tubes not being of the spur tube or "Field" tube type. These headers may be in communication with longitudinally or transversely disposed drums.

Search Class

122—LIQUID HEATERS AND VAPORIZERS, subclasses 305, Water tube, Spur, and the subclasses thereunder, with the exception of subclass 317, Water tube, Spur, Straddle; 474, Steam treatment, Water tube boiler, Over bridge wall, Superheater.

296. **WATER-TUBE, REARWARDLY DECLINED, OVER BRIDGE-WALL, FRONT AND REAR HEADER, LONGITUDINAL DECLINED DRUM.** Water tube boilers having banks of substantially parallel water tubes rearwardly declined over the bridge wall and in communication with front and rear headers, which in turn are in either direct or indirect communication with one or more drums substantially parallel with the tubes and rearwardly declined longitudinally of the boiler.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 471, Steam treatment, Water tube boiler, Declined over bridge wall, Front and rear header, Declined drum, Superheater.

297. **WATER-TUBE, REARWARDLY DECLINED, OVER BRIDGE-WALL, FRONT AND REAR HEADER, TRANSVERSE DRUM.** Water tube boilers having banks of substantially parallel water tubes rearwardly declined over the bridge wall and in communication with front and rear headers, which are in turn in communication, either directly or indirectly, with one or more transverse drums.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 277, Water tube, Loop, Over bridge wall; 331, Water tube, Transverse horizontal drum, and 478, Steam treatment, Water tube boiler, Transverse drum, Superheater.

CLASS 122—Continued.

298. **WATER-TUBE, REARWARDLY DECLINED, OVER FIREBOX, FRONT AND REAR HEADER, HORIZONTAL LONGITUDINAL DRUM.** Water tube boilers having banks of water tubes declined rearwardly over the firebox, in communication with front and rear headers, which are in turn in communication, directly or indirectly, with one or more horizontally and longitudinally posited drums above the tubes.

299. **WATER-TUBE, REARWARDLY DECLINED, OVER FIREBOX, FRONT AND REAR HEADER, TRANSVERSE DRUM.** Water tube boilers having banks of water tubes substantially parallel, rearwardly declined over the firebox, and in communication with front and rear headers, which are in turn either directly or indirectly in communication with one or more transversely posited drums.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 265, Water tube, Inclined.

300. **WATER-TUBE, REARWARDLY DECLINED, OVER FIREBOX, FRONT AND REAR HEADER, TUBES BEYOND SIDE WALL.** Water tube boilers consisting of banks of water tubes rearwardly declined over the firebox and in communication with front and rear headers, which may also be in communication with some form of drums above the tubes, and also having banks of tubes beyond side walls of the main combustion chamber.

301. **WATER-TUBE, REARWARDLY DECLINED, PLURAL UPPER TRANSVERSE DRUM, PLURAL LOWER TRANSVERSE DRUM.** Water tube boilers consisting of rearwardly declined banks of water tubes, in communication with a plurality of horizontally and transversely disposed drums, both at the top and at the bottom of the tubes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 352, Water tube, Vertical, Plural upper transverse drum, Plural lower transverse drum, Offset firebox, for analogous structures; 478, Steam treatment, Water tube boiler, Transverse drum, Superheater.

302. **WATER-TUBE, REARWARDLY DECLINED, PLURAL UPPER TRANSVERSE DRUM, SINGLE LOWER TRANSVERSE DRUM.** Water tube boilers consisting of banks of tubes rearwardly declined and communicating with a plurality of upper transverse horizontal drums at the top and with a single transverse horizontal drum at the bottom, or the tubes may be in communication with a header at the bottom, which is in turn in communication with the lower drum.

303. **WATER-TUBE, REARWARDLY INCLINED, OVER FIREBOX, FRONT AND REAR HEADER, TRANSVERSE DRUM.** Water tube boilers having banks of substantially parallel water tubes rearwardly inclined over the firebox and in communication with front and rear headers, which are in turn in either direct or indirect communication with one or more transversely posited drums.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 265, Water tube, Inclined.

304. **WATER-TUBE, SEPARATE BANKS, OPPOSITE FIREBOXES.** Water tube boilers provided with separate banks of water tubes over separate fireboxes disposed on opposite sides of the unitary boiler structure.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 240, Water tube, Plural firebox, for water tube boilers with a plurality of fireboxes that do not come within the definition of this subclass.

305. **WATER-TUBE, SPUR.** Water tube boilers not otherwise classifiable having spur tubes projecting from a drum or equivalent, communicating therewith at one end and having the other end closed.

Note.—The following is a list of subclasses disclosing boilers having spur tubes which form some substantial part of the heating surface:

Fire-tube—	Water-tube—
Vertical—	Spur—
Water tube—	311. Cross,
313. Spur.	312. Horizontal longitudinal drum,
Flue—	313. Over bridge wall,
Horizontal—	Over firebox—
Internal water tube—	314. Central header,
314. Spur,	315. Declined,
315. Vertical—	316. Horizontal,
Internal water tube—	318. Vertical—
173. Horizontal spur,	319. Fluid fuel,
Vertical aligned fire tube—	320. Central magazine,
180. Spur water tube,	Vertical—
181. Vertical spur,	Annular lower drum—
Stand pipe—	Spur-tube upper drum.
Water tube—	342.
186. Spur.	Steam treatment—
Water-tube—	Fire tube boiler—
305. Spur—	Horizontal—
306. Bridge wall header,	Superheater—
307. Central stand pipe—	In fire tube—
308. Fluid fuel,	462. From smoke-box.
309. Annular firebox,	
310. Central magazine,	

CLASS 122—Continued.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 275, Water tube, Loop, and the subclasses thereunder, for water tube boilers of similar types having looped tubes.

306. **WATER-TUBE, SPUR, BRIDGE-WALL HEADER.** Water tube boilers having a vertical header located at the bridge wall, provided with spur tubes extending over the firebox and in rear thereof or extending in the rear of the firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 280, Water tube, Loop, Over firebox, Rear of bridge wall, Bridge wall header, for boilers of similar structure provided with looped tubes.

307. **WATER-TUBE, SPUR, CENTRAL STAND-PIPE.** Water tube boilers having a stand pipe provided with radial spur tubes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 133, Fire tube, Vertical, Water tube, Spur, for vertical fire tube boilers provided with radial spur tubes; 143, Flue, Horizontal, Internal water tube, Spur, for horizontal flue boilers provided with spur water tubes internally; 173, Flue, Vertical, Internal water tube, Horizontal spur, for vertical flue boilers provided with internal horizontal spur tubes; 180, Flue, Vertical, Internal water tube, Vertical aligned fire tube, Spur water tube, for vertical flue boilers with vertically aligned fire tubes and having spur water tubes; 181, Flue, Vertical, Internal water tube, Vertical spur, for vertical flue boilers with vertical spurs; 244, Water tube, Coil or loop, Central stand pipe, and the subclasses thereunder, for stand pipes provided with coiled or looped tubes; 281, Water tube, Loop, Over firebox, Stand pipe, for stand pipe boilers of the water tube type provided with radial looped tubes over the firebox; 342, Water tube, Vertical, Annular lower drum, Spur tube upper drum, for spur tube drums; 475, Steam treatment, Water tube boiler, Stand pipe, Spur tube, Superheater, for this type of boiler with a superheater.

308. **WATER-TUBE, SPUR, CENTRAL STAND-PIPE, FLUID FUEL.** Water tube boilers having a central stand pipe provided with spur tubes and heated by fluid fuel.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 245, Water tube, Coil or loop, Central stand pipe, Fluid fuel, for water tube boilers having a central stand pipe provided with coiled or looped tubes and heated by fluid fuel; 281, Water tube, Loop, Over firebox, Stand pipe, for water tube boilers having stand pipes provided with looped tubes; 322, Water tube, Stand pipe, Fluid fuel, for miscellaneous water tube boilers provided with stand pipes and heated by fluid fuel.

309. **WATER-TUBE, SPUR, CENTRAL STAND-PIPE, ANNULAR FIREBOX.** Water tube boilers having a central stand pipe provided with spur tubes and extending below the fire grate, forming an annular firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 186, Flue, Vertical, Stand pipe, Water tube, Spur, for vertical flue boilers with a spur tube stand pipe and an annular firebox; 246, Water tube, Coil or loop, Central stand pipe, Annular firebox, for boilers of the water tube type provided with a central stand pipe having coils or loops and an annular firebox; 323, Water tube, Stand pipe, Annular firebox, for miscellaneous water tube boilers with a central stand pipe and an annular firebox.

310. **WATER-TUBE, SPUR, CENTRAL STAND-PIPE, CENTRAL MAGAZINE.** Water tube boilers having a central stand pipe provided with spur tubes and having a fuel magazine within the stand pipe.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 168, Flue, Vertical, Internal water tube, Central magazine, for vertical flue boilers with central magazines with internal water tubes.

311. **WATER-TUBE, SPUR, CROSS.** Water tube boilers having spur tubes crossing each other not otherwise classifiable.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 278, Water tube, Loop, Over firebox, Cross, for cross looped tubes.

312. **WATER-TUBE, SPUR, HORIZONTAL LONGITUDINAL DRUM.** Boilers having a horizontal longitudinal drum provided with spur water tubes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 195, Horizontal cylinder, Water tube; 273, Water tube, Longitudinal upper drum, and 274, Water tube, Longitudinal upper drum, Fluid fuel; 317, Water tube, Spur, Straddle, for drums provided with spur tubes that straddle the combustion chamber.

313. **WATER-TUBE, SPUR, OVER BRIDGE-WALL.** Water tube boilers having spur water tubes extending over the bridge wall.

314. **WATER-TUBE, SPUR, OVER FIREBOX, CENTRAL HEADER.** Water tube boilers having a vertical header provided with spur water tubes on both sides, located over the firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 319, Water tube, Spur, Vertical, Fluid fuel, for analogous art.

CLASS 122—Continued.

315. WATER-TUBE, SPUR, OVER FIREBOX, DECLINED. Water tube boilers having spur tubes declined over the firebox.

316. WATER-TUBE, SPUR, OVER FIREBOX, HORIZONTAL. Water tube boilers having spur water tubes horizontally disposed over the firebox.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclass 279, Water tube, Loop, Over firebox, Horizontal, for horizontal loop tubes over the firebox.

317. WATER-TUBE, SPUR, STRADDLE. Water tube boilers having spur water tubes straddling the combustion chamber.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 99, Fire tube, Horizontal, Water firebox, Water tube, Straddle; 270, Water tube, Internal fire tube, Straddle, for spur tubes having internal fire tubes straddling the combustion chamber; 324, Water tube, Straddle, and the subclasses thereunder, for other types of water tube boilers of the straddle type.

318. WATER-TUBE, SPUR, VERTICAL. Water tube boilers having vertical spur tubes.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 133, Fire tube, Vertical, Water tube, Spur, for vertical fire tube boilers with vertical spur tubes; 181, Flue, Vertical, Internal water tube, Vertical spur; 282, Water tube, Loop, Over firebox, Vertical; 271, Water tube, Internal fire tube, Vertical, and 348, Water tube, Vertical, Internal fire tube, Fluid fuel.

319. WATER-TUBE, SPUR, VERTICAL, FLUID FUEL. Water tube boilers having vertical spur water tubes heated by fluid fuel.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 179, Flue, Vertical, Internal water tube, Vertical aligned fire tube, Fluid fuel; 283, Water tube, Loop, Over firebox, Vertical, Fluid fuel; 333, Water tube, Vertical, Fluid fuel, and 348, Water tube, Vertical, Internal fire tube, Fluid fuel, for other types of vertical water tube boilers heated by fluid fuel.

320. WATER-TUBE, SPUR, VERTICAL, CENTRAL MAGAZINE. Water tube boilers having vertical spur tubes and a centrally disposed fuel magazine.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 168, Flue, Vertical, Internal water tube, Central magazine, for vertical flue boilers with internal spur tubes; 339, Water tube, Vertical, Annular lower drum, Annular upper drum, Central magazine, and 344, Water tube, Vertical, Annular lower drum, Upper drum, Central magazine, for other types of water tube boilers with vertical tubes and a central magazine.

321. WATER-TUBE, STAND-PIPE. Water tube boilers having a vertical pipe relatively large in cross section and provided with some form of water tubes and not otherwise provided for.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 13, Stand boiler, and the subclasses thereunder, for range or kitchen boilers, called in the art "stand boilers," which are provided with a heater; 132, Fire tube, Vertical, Water tube, Radial loop; 133, Fire tube, Vertical, Water tube, Spur; 184, Flue, Vertical, Stand pipe, Water tube, Annular firebox; 185, Flue, Vertical, Stand pipe, Water tube, Loop; 186, Flue, Vertical, Stand pipe, Water tube, Spur; 215, Sectional, Horizontal sections, Superimposed, Central connection, and the subclasses thereunder, and 218, Sectional, Horizontal sections, Superimposed, 1, Water firebox, for sectional stand pipe boilers; 214, Water tube, Coil or loop, Central stand pipe, and the subclasses thereunder; 281, Water tube, Loop, Over firebox, Stand pipe; 307, Water tube, Spur, Central stand pipe, and the subclasses thereunder, and subclass 475, Steam treatment, Water tube boiler, Stand pipe, Spur tube, Superheater, for stand pipes provided with spur water tubes; 322, Water tube, Stand pipe, Fluid fuel, for miscellaneous stand pipe water tube boilers heated by fluid fuel; 323, Water tube, Stand pipe, Annular firebox, for miscellaneous stand pipe water tube boilers with an annular firebox.

322. WATER-TUBE, STAND-PIPE, FLUID FUEL. Miscellaneous water tube boilers with a stand pipe of different forms or provided with some form of water tubes and heated by fluid fuel not otherwise provided for.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 216, Sectional, Horizontal sections, Superimposed, Central connection, Fluid fuel, for sectional stand pipe boilers heated by fluid fuel; 245, Water tube, Coil or loop, Central stand pipe, Fluid fuel, for coiled or looped tube boilers with a stand pipe and heated by fluid fuel; 308, Water tube, Spur, Central stand pipe, Fluid fuel, for stand pipes provided with spur water tubes and heated by fluid fuel.

323. WATER-TUBE, STAND-PIPE, ANNULAR FIREBOX. Miscellaneous water tube boilers not otherwise provided for having a stand pipe provided with some form of water tubes, the stand pipe extending downwardly below the fire grate, forming an annular firebox.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 184, Flue, Vertical, Stand pipe, Water tube, Annular firebox; 246, Water tube, Coil or loop, Central stand pipe, Annular firebox; 309, Water tube, Spur, Central stand pipe, Annular firebox, and 475, Steam treatment, Water tube boiler, Stand pipe, Spur tube, Superheater, for stand pipes provided with spur tubes having an annular firebox.

CLASS 122—Continued.

324. WATER-TUBE, STRADDLE. Water tube boilers having water tubes that straddle the combustion chamber.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 99, Fire tube, Horizontal, Water firebox, Water tube, Straddle; 270, Water tube, Internal fire tube, Straddle, and 317, Water tube, Spur, Straddle, for other types of straddle water tube boilers.

325. WATER-TUBE, STRADDLE, PLURAL UPPER DRUM, PLURAL LOWER DRUM. Water tube boilers having water tubes straddling the combustion chamber, the tubes being either in communication with headers at top and bottom, which are in turn in communication with separate upper and lower drums, or in communication directly with separate upper and lower drums.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 240, Water tube, Plural firebox; 351, Water tube, Vertical, Plural upper longitudinal drum, Plural lower longitudinal drum.

326. WATER-TUBE, STRADDLE, PLURAL UPPER DRUM, PLURAL LOWER DRUM, CROSS. Boilers of the type defined in subclass 325 above, but having the tubes crossed over the combustion chamber.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclass 329, Water tube, Straddle, Single upper drum, Plural lower drum, Cross.

327. WATER-TUBE, STRADDLE, SINGLE UPPER DRUM, PLURAL LOWER DRUM. Water tube boilers having water tubes straddling the combustion chamber and either in direct communication with a single upper drum and with a plurality of lower drums or in direct communication with headers, which are in turn in communication with the drums.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 99, Fire tube, Horizontal, Water firebox, Water tube, Straddle; 329, Water tube, Straddle, Single upper drum, Plural lower drum, Cross, for boilers of this type having the tubes crossing each other.

328. WATER-TUBE, STRADDLE, SINGLE UPPER DRUM, PLURAL LOWER DRUM, FLUID FUEL. Types of boilers defined in subclass 327 above and heated by fluid fuel.

329. WATER-TUBE, STRADDLE, SINGLE UPPER DRUM, PLURAL LOWER DRUM, CROSS. Water tube boilers having tubes that cross each other and straddle the combustion chamber, communicating either directly with a single upper drum and a plurality of lower drums or communicating directly with headers, which in turn communicate with the drums.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 326, Water tube, Straddle, Plural upper drum, Plural lower drum, Cross; 327, Water tube, Straddle, Single upper drum, Plural lower drum, and 328, Water tube, Straddle, Single upper drum, Plural lower drum, Fluid fuel, for this type of boiler without the cross tubes; 330, Water tube, Straddle, Single upper drum, Plural lower drum, Plural firebox, for this type of boiler with plural fireboxes.

330. WATER-TUBE, STRADDLE, SINGLE UPPER DRUM, PLURAL LOWER DRUM, PLURAL FIREBOX. Water tube boilers having two or more fireboxes and water tubes that straddle the fireboxes, either in direct communication with a single upper drum and a plurality of lower drums or directly in communication with headers, that are in turn in communication with the drums.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclass 240, Water tube, Plural firebox.

331. WATER-TUBE, TRANSVERSE HORIZONTAL DRUM. Water-tube boilers having one or more transverse horizontal drums provided with water tubes that are not otherwise provided for.

Note.—The following subclasses include water tube boilers with transverse horizontal drums:

Water-tube—	Water-tube—
Cross—	Rearwardly declined—
Over firebox—	Plural upper transverse drum—
Longitudinal—	302. Single lower transverse drum,
Header—	Rearwardly inclined—
Drum,	Over firebox—
Transverse—	Front and rear header—
Header—	303. Transverse drum.
Drum,	332. Vertical—
Loop—	Beyond bridge wall—
Over bridge-wall,	346. Gas return,
Rearwardly declined—	Plural upper transverse drum—
Over bridge wall—	Plural lower transverse drum—
Front and rear header—	352. Offset firebox,
Transverse drum,	Zigzag—
Over firebox—	Over bridge-wall—
Front and rear header—	358. Transverse drum.
Transverse drum,	
Plural upper transverse drum—	
301. Plural lower transverse drum,	

CLASS 122—Continued.

332. WATER-TUBE, VERTICAL. Water-tube boilers having vertical tubes not otherwise classifiable.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 103, Fire tube, Horizontal, Water tube, Rear of fire tube, 171, Flue, Vertical, Internal water tube, Contracted inlet; 198, Horizontal cylinder, Water tube, Lateral vertical, and 199, Horizontal cylinder, Water tube, Lateral vertical, Firebox; 247, Water tube, Coil, and the subclasses thereunder; 266, Water tube, Internal fire tube, and the subclasses thereunder; 275, Water tube, Loop, and the subclasses thereunder; 281, Water tube, Loop, Over firebox, Stand pipe, for vertical columns provided with looped tubes extending over the firebox; 282, Water tube, Loop, Over firebox, Vertical, and 318, Water tube, Spur, Vertical; 305, Water tube, Spur, and the subclasses thereunder, for spur tube boilers; 355, Water tube, Zigzag, and 359, Water tube, Zigzag, Over firebox, for vertical columns surrounding the combustion chamber, with zigzag water tubes communicating with the columns.

333. WATER-TUBE, VERTICAL FLUID FUEL. Water tube boilers with vertical tubes heated by fluid fuel.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 167, Flue, Vertical, Internal water tube, Fluid fuel, and 174, Flue, Vertical, Internal water tube, Internal fire tube; 250, Water tube, Coil, Vertical, Fluid fuel; 283, Water tube, Loop, Over firebox, Vertical, Fluid fuel; 319, Water tube, Spur, Vertical, Fluid fuel; 348, Water tube, Vertical, Internal fire tube, Fluid fuel.

334. WATER-TUBE, VERTICAL, SIDE MAGAZINE. Water tube boilers having vertical water tubes and a fuel magazine at the side of the boiler.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 339, Water tube, Vertical, Annular lower drum, Annular upper drum, Central magazine, and 344, Water tube, Vertical, Annular lower drum, Upper drum, Central magazine, for other types of fuel magazines with vertical water tube boilers; 373, Water grate, Cage, for analogous art.

335. WATER-TUBE, VERTICAL, ANNULAR FIREBOX. Water tube boilers having vertical water tubes and an annular or surrounding firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 246, Water tube, Coil or loop, Central stand pipe, Annular firebox, for coiled or looped water tubes around a stand pipe having an annular firebox; 309, Water tube, Spur, Central stand pipe, Annular firebox.

336. WATER-TUBE, VERTICAL, OFFSET FIREBOX. Water tube boilers having vertical water tubes and an offset firebox exterior of the main boiler structure.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 175, Flue, Vertical, Internal water tube, Offset water firebox, for other types; 209, Sectional, for sectional boilers with offset fireboxes; 213, Sectional, Plural firebox, for sectional boilers with plural fireboxes, one of which may be offset; 221, Sectional, Vertical sections, Annularly posited; subclass 238, Water tube, Offset firebox; 352, Water tube, Vertical, Plural upper transverse drum, Plural lower transverse drum, Offset firebox.

337. WATER-TUBE, VERTICAL, OFFSET FIREBOX, ELEVATED. Water tube boilers having vertical water tubes and an offset firebox at the top of the boiler.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 175, Flue, Vertical, Internal water tube, Offset water firebox, for other types; 209, Sectional, for sectional boilers with offset fireboxes; 213, Sectional, Plural firebox, for sectional boilers with plural fireboxes, one of which may be offset; 221, Sectional, Vertical sections, Annularly posited; 238, Water tube, Offset firebox; 352, Water tube, Vertical, Plural upper transverse drum, Plural lower transverse drum, Offset firebox.

338. WATER-TUBE, VERTICAL, ANNULAR LOWER DRUM, ANNULAR UPPER DRUM. Water tube boilers having substantially vertical water tubes communicating with the upper and the lower drums, which are of ring or equivalent form.

339. WATER-TUBE, VERTICAL, ANNULAR LOWER DRUM, ANNULAR UPPER DRUM, CENTRAL MAGAZINE. Boilers of the type defined in subclass 338 above and having a centrally disposed fuel magazine.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 251, Water tube, Coil, Vertical, Central magazine; 320, Water tube, Spur, Vertical, Central magazine; 344, Water tube, Vertical, Annular lower drum, Upper drum, Central magazine, for boilers of a similar type having a central magazine, but whose upper drum is not annular in form.

340. WATER-TUBE, VERTICAL, ANNULAR LOWER DRUM, ANNULAR UPPER DRUM, TUBES OVER FIREBOX. Boilers of the type defined in subclass 338 above, having water tubes within the space inclosed by the vertical tubes over the firebox.

341. WATER-TUBE, VERTICAL, ANNULAR LOWER DRUM, FIRE-TUBE UPPER DRUM. Water tube boilers having vertical water tubes communicating with an annular lower drum and communicating with an upper drum provided with fire tubes.

CLASS 122—Continued.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 342, Water tube, Vertical, Annular lower drum, Spur tube upper drum, and 343, Water tube, Vertical, Annular lower drum, Upper drum, for boilers of similar structure, but whose upper drum is not provided with fire tubes.

342. WATER-TUBE, VERTICAL, ANNULAR LOWER DRUM, SPUR-TUBE UPPER DRUM. Water tube boilers having vertical water tubes communicating with an annular lower drum and an upper drum provided with spur water tubes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 341, Water tube, Vertical, Annular lower drum, Fire tube upper drum, and 343, Water tube, Vertical, Annular lower drum, Upper drum, for boilers of similar structure without the spur tubes on the upper drum.

343. WATER-TUBE, VERTICAL, ANNULAR LOWER DRUM, UPPER DRUM. Boilers having vertical water tubes communicating with an annular lower drum and with an upper drum that are not provided for elsewhere.

344. WATER-TUBE, VERTICAL, ANNULAR LOWER DRUM, UPPER DRUM, CENTRAL MAGAZINE. Types of boilers, defined in subclass 343 above, having a central magazine.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 339, Water tube, Vertical, Annular lower drum, Annular upper drum, Central magazine.

345. WATER-TUBE, VERTICAL, BEYOND BRIDGE-WALL. Water tube boilers having vertical water tubes beyond the bridge wall and with or without vertical water tubes around or over the firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 226, Sectional, Vertical sections, Transversely posited, Casing, for analogous art in sectional boilers; 347, Water tube, Vertical, Beyond bridge wall, Longitudinal upper drum, Longitudinal lower drum, and 352, Water tube, Vertical, Plural upper transverse drum, Plural lower transverse drum, Offset firebox.

346. WATER-TUBE, VERTICAL, BEYOND BRIDGE-WALL, GAS RETURN. Water tube boilers having vertical water tubes beyond the bridge wall and above the firebox, with any type of drums or headers communicating with the tubes and so arranged that the products of combustion pass over the bridge wall and upwardly through a separate passage to the front of the boiler before they are discharged.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 350, Water tube, Vertical, Over firebox, Gas return, for similar art where there are boilers with vertical tubes wholly over the firebox and having the products of combustion pass out at one end of the firebox and return through the vertical tubes above the firebox.

347. WATER-TUBE, VERTICAL, BEYOND BRIDGE-WALL, LONGITUDINAL UPPER DRUM, LONGITUDINAL LOWER DRUM. Water tube boilers having vertical water tubes in the rear of the bridge wall and communicating with a longitudinal upper and a longitudinal lower drum. There may or may not be water tubes above the firebox, but the products of combustion do not return.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 346, Water tube, Vertical, Beyond bridge wall, Gas return, for vertical water tube boilers having horizontal longitudinal upper and lower drums where the products of combustion pass also rearwardly through the tubes; 444, Feed heaters, Water tube boiler.

348. WATER-TUBE, VERTICAL, INTERNAL FIRE-TUBE, FLUID FUEL. Water tube boilers having vertical water tubes provided with internal fire tubes and heated by fluid fuel.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 174, Flue, Vertical, Internal water tube, Internal fire tube, for vertical flue boilers having vertical water tubes provided with internal fire tubes; 243, Water tube, Capillary, Fluid fuel; 271, Water tube, Internal fire tube, Vertical, for vertical water tube boilers provided with internal fire tubes and heated by solid fuel.

349. WATER-TUBE, VERTICAL, OVER FIREBOX. Water-tube boilers having vertical water tubes communicating with drums or headers and being located over the firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 282, Water tube, Loop, Over firebox, Vertical; 318, Water tube, Spur, Vertical; 333, Water tube, Vertical, Fluid fuel.

350. WATER-TUBE, VERTICAL, OVER FIREBOX, GAS RETURN. Water tube boilers having vertical water tubes over the firebox, the products of combustion passing out of the firebox at the rear and returning over the firebox between the water tubes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 346, Water tube, Vertical, Beyond bridge wall, Gas return.

CLASS 122—Continued.

351. WATER-TUBE, VERTICAL, PLURAL UPPER LONGITUDINAL DRUM, PLURAL LOWER LONGITUDINAL DRUM. Water tube boilers having vertical water tubes in communication with a plurality of horizontally and longitudinally posited upper and lower drums forming a plurality of fireboxes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 240, Water tube, Plural firebox, for analogous art.

352. WATER-TUBE, VERTICAL, PLURAL UPPER TRANSVERSE DRUM, PLURAL LOWER TRANSVERSE DRUM, OFFSET FIREBOX. Water tube boilers having a plurality of upper transverse drums and a plurality of lower transverse drums with vertical water tubes connecting the upper and lower drums and with a firebox offset from the main boiler structure.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 238, Water tube, Offset firebox; 301, Water tube, Rearwardly declined, Plural upper transverse drum, Plural lower transverse drum, and 336, Water tube, Vertical, Offset firebox, for analogous art.

353. WATER-TUBE, WATER-GRATE. Water tube boilers with water grates that are not otherwise provided for.

Note—The following is a list of subclasses of water tube boilers with water grates:

Water-tube—

Over bridge wall—

Water-grate—

286. Downdraft,

287. Intermediate draft,

Over firebox—

Water-grate—

289. Updraft,

Water-grate—

354. Downdraft.

354. WATER-TUBE, WATER-GRATE, DOWNDRAFT. Water tube boilers, having downdraft water grates.

355. WATER-TUBE, ZIGZAG. Water-tube boilers having the water tubes so arranged that the water passes back and forth in a zigzag manner through the tubes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 247, Water tube, Coil, and the subclasses thereunder; 258, Water tube, Downflow, for zigzag tubes where the water flows downwardly through the tubes; 275, Water tube, Loop, and the subclasses thereunder, for looped tube boilers where the water flows through one tube and back through another; 305, Water tube, Spur, and the subclasses thereunder, for spur tube boilers provided with an internal tube or partition, so that the water will flow out and back through the same tube.

356. WATER-TUBE, ZIGZAG, FLUID FUEL. Zigzag water-tube boilers heated by fluid fuel.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 208, Plate, Zigzag conduit, Fluid fuel, for plate boilers with zigzag conduits; 250, Water tube, Coil, Vertical, Fluid fuel.

357. WATER-TUBE, ZIGZAG, OVER BRIDGE-WALL, LONGITUDINAL DRUM. Zigzag water tube boilers having a longitudinally posited drum above the tubes, which extend in a zigzag manner over the bridge wall.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 273, Water tube, Longitudinal upper drum, and see the subclasses noted thereunder, for other types of water tube boilers having a longitudinal drum.

358. WATER-TUBE, ZIGZAG, OVER BRIDGE-WALL TRANSVERSE DRUM. Zigzag water tube boilers having water tubes that extend over the bridge wall in a zigzag manner and in communication with one or more transversely posited drums.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 331, Water tube, Transverse horizontal drum (see the subclasses noted thereunder, for other types of water tube boilers having transversely posited drums).

359. WATER-TUBE, ZIGZAG, OVER FIREBOX. Water tube boilers of the zigzag type whose tubes are located over the firebox.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 249, Water tube, Coil, Vertical; 258, Water tube, Down flow, for zigzag boilers having tubes over the firebox when the flow of fluid is in a downward direction; 356, Water tube, Zigzag, Fluid fuel.

360. WATER-TUBE, HEADERS, CLOSURES AND COUPLINGS. The structure of headers for water tube boilers; also includes the coupling connection between the headers and water tubes and the closures for the hand holes in the headers when the form of the header is involved in the claims.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclass 511, Tubes and connections.

137—WATER DISTRIBUTION, subclasses 98, Pipe couplings, Pipe and plate, for couplings and unions between a tube and plate of general application; and 100, Mains and pipes, Tubes, for structure of boiler tubes *per se*.

220—METALLIC SHIPPING AND STORING VESSELS, subclass 124, Tank closures, for manholes and closures of general application, whether applied to a boiler or boiler header, where the structure of the boiler or header is not involved.

CLASS 122—Continued.

361. WATER-TUBE, HEADERS, CLOSURES AND COUPLINGS, CLEANING. The structure of the header, with its connections, when formed for the purpose of cleaning the header or boiler tubes, either inside or outside.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 379, Cleaning, and its subsidiary subclasses, for the general apparatus for cleaning boilers of the kind classified in class 122.

362. WATER-TUBE, HEADERS, CLOSURES AND COUPLINGS, CONCENTRIC TUBE. The structure of the header and tube connections of specific application for a water tube boiler when two tubes concentrically arranged are coupled to a header.

Search Classes—

62—REFRIGERATION; 127, SUGAR AND SALT, and 237, HEAT DISTRIBUTING SYSTEMS.

363. WATER-TUBE, HEADERS, CLOSURES AND COUPLINGS, DRUM. The structure of headers of the drum type and tube connections therefor and closures for the drum hand holes when the drum structure is involved.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 365, Water tube, Drums and couplings, for general structure of drums for water tube boilers; 393, Cleaning, Mud drum.

220—METALLIC SHIPPING AND STORING VESSELS, subclass 124, Tank closures, for closures of general application.

364. WATER-TUBE, HEADERS, CLOSURES AND COUPLINGS, TUBE CLOSURES. Headers and tubes provided with valves for closing the flow of water through the tubes or headers.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclass 507, Safety devices, Self-closing valve, for automatically closed valves classified in class 122.

136—STEAM ENGINE VALVES, subclass 11, Throttle, for automatically closed valves of general application for closing a conduit when it breaks.

137—WATER DISTRIBUTION, subclass 76, Mains and pipes, Stoppers, for boiler tube closures of general application.

365. WATER-TUBE, DRUMS AND COUPLINGS. The structure of drums and couplings and unions between the drum and the header or the drum and the water tubes.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 192, Horizontal cylinder, Water bridge wall, for drums; 363, Water tube, Headers, Closures and couplings, Drum, for headers of drum form; 393, Cleaning, Mud drum, for structure of mud drums unless of general application; 434, Feed heaters, Locomotive tender, for special combinations of drums and feed water heaters; 511, Tubes and connections, and 512, Tube sheets, for couplings of specific form for boilers.

121—STEAM ENGINES, subclass 110, Packing, Steam joint, and 137, WATER DISTRIBUTION, generally, for packing and gaskets.

366. WICK. Boilers provided with an absorbent wick within the fluid chamber for raising water from one part of the chamber to another to increase the generation of vapor.

367. HEAT TRANSMITTER. Boilers with some special heat transmitting structure not otherwise classifiable.

Note.—Most of these devices include tubes or boiler walls provided with flanges or heat conducting pins.

Search Class—

237—HEAT DISTRIBUTING SYSTEMS, subclass 20, Steam radiators, Heat diffusing elements, for heat transmitters.

368. WATER-FIREBOX. Boilers not otherwise classifiable having water fireboxes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 44, Fire tube and Water firebox subclasses thereunder; 135, Flue, and Water firebox subclasses thereunder; 209, Sectional and subclasses of Water firebox thereunder; 2, Plants, Garbage, for garbage burning plants disclosing boilers with water fireboxes; 8, Industrial, Water firebox, and 9, Industrial, Water firebox, Water tube type, for industrial furnaces having water fireboxes; 15, Stand boiler, Solid fuel, for stand boilers having water fireboxes; 135, Flue, for most of the patents for boilers with water fireboxes, but claiming or disclosing more than a water firebox; 193, Horizontal cylinder, Water firebox, and 194, Horizontal cylinder, Water firebox, Water tube type, and the subclasses under Horizontal cylinder, Offset subjacent firebox, for horizontal cylindrical boilers with water fireboxes; and the water tube boiler subclasses for special combinations of water fireboxes with water tube boilers, and especially subclasses 241, Water tube, Firebox in drum, and 252, Water tube, Coil, Vertical, Water firebox, for water fireboxes.

369. WATER-FIREBOX, MUD RING. The construction of the lower part of a water firebox and mud ring or spacing member forming the bottom of the water walls.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 385, Cleaning, Blow-off, Bottom, Internal conduit, Mud ring.

370. WATER-FIREBOX, PLURAL. Miscellaneous water firebox boilers having a plurality of water fireboxes not otherwise provided for.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, under the types of boilers disclosed for other types of water firebox boilers having a plurality of water fireboxes. The following subclasses are the most important ones having plural water fireboxes:

CLASS 122—Continued.

- | | |
|--|---|
| <p>Fire-tube—
Horizontal—
Double water firebox—
57. Alternate smoke return.
Drop water firebox—
Double—
60. Alternate smoke return.
Water firebox—
Plural—
95. Common combustion chamber.
96. Superposed.</p> | <p>Sectional—
213. Plural firebox,
Vertical sections—
Transversely posited—
229. Water grate.
Water-grate—
Plural firebox—
Superimposed—
372. Water grate—
Updraft.</p> |
|--|---|

371. **WATER-GRATE.** Boilers having water grates that do not come within the definitions of other subclasses.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 2, Plants, Garbage, for garbage boiler plants disclosing boilers with water grates; 5, Gas producer; 321, Water tube, Stand pipe, and 323, Water tube, Stand pipe, Annular firebox; 66, Fire tube, Horizontal, Drop water firebox, Water coking chamber; 67, Fire tube, Horizontal, Drop water firebox, Water grate, Intermediate draft; 97, Fire tube, Horizontal, Water firebox, Water grate, Downdraft, and 98, Fire tube, Horizontal, Water firebox, Water grate, Updraft, for horizontal fire tube boilers, other than those included in subclasses under Horizontal cylinder, Water tube, Water grate, having water grates; 129, Fire tube, Vertical, Water grate, Downdraft; 152, Flue, Horizontal, Water grate in flue; 203 to 207 under Horizontal cylinder, Water tube, Water grate; 229, Sectional, Vertical sections, Transversely posited, Water grate, and 232, Sectional, Water grate; 286, Water tube, Over bridge wall, Water grate, Downdraft; 287, Water tube, Over bridge wall, Water grate, Intermediate draft; 289, Water tube, Over firebox, Water grate, Updraft; 353, Water tube, Water grate, and 354, Water tube, Water grate, Downdraft.

372. **WATER-GRATE, PLURAL FIREBOX, SUPERIMPOSED, WATER-GRATE, UPDRAFT.** Boilers not otherwise classified having superimposed fireboxes, with at least one of the fuel grates of the water grate type.

Note.—This type of boiler is generally used for the burning of garbage or other waste material.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 2, Plants, Garbage, for garbage plants having water grate boilers of this type; 207, Horizontal cylinder, Water tube, Water grate, Updraft, and 232, Sectional, Water grate; 353, Water tube, Water grate, for water tube boilers with superposed updraft water grates.

373. **WATER-GRATE, CAGE.** Boilers having a water grate of cage-like or basket-like structure.

Search Classes—

110—FURNACES, subclass 30, Furnace structure, Magazine, Cage-grate.
126—STOVES AND FURNACES, subclass 132, Fireplaces, Water-backs.

374. **WATER-GRATE, GRATE STRUCTURE.** The structure of water grates themselves except the cage grate type.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 321, Water tube, Stand pipe; 373, Water grate, Cage; 375, Water grate, Grate structure, Solid and water bar.

375. **WATER-GRATE, GRATE STRUCTURE, SOLID AND WATER BAR.** The structure of grates having both solid and water bars.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 206, Horizontal cylinder, Water tube, Water grate, Solid and water bar, for horizontal cylindrical boilers with this type of grate; subclass 374, Water grate, Grate structure.

376. **WATER-GRATE, PROGRESSIVE FEED.** Boilers having a water-cooled progressive fuel feeding grate having means for moving the fuel along the grate.

377. **WATER-GRATE, WATER-FIREBOX, SOLID AND WATER BAR, UPDRAFT.** Boilers not otherwise provided for having a water firebox with an updraft fuel grate composed of both solid bars and water bars.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 206, Horizontal cylinder, Water tube, Water grate, Solid and Water bar; 213, Sectional, Plural firebox, and 229, Sectional, Vertical sections, Transversely posited, Water grate; 353, Water tube, Water grate, for water tube boilers with this type of water grate; 375, Water grate, Grate structure, Solid and water bar, for the grate structure of this type of grate.

378. **WATER-GRATE, WATER-FIREBOX, UPDRAFT.** Boilers not otherwise provided for having a water firebox with an updraft water grate.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 98, Fire tube, Horizontal, Water firebox, Water grate, Updraft; 229, Sectional, Vertical sections, Transversely posited, Water grate, and 232, Sectional, Water grate; 289, Water tube, Over firebox, Water grate, Updraft, and 353, Water tube, Water grate.

CLASS 122—Continued.

379. **CLEANING.** Boilers provided with mechanism for cleaning the boiler or purifying the water while the boiler is in operation and so united therewith that it remains in position when the boiler is in operation, or the mechanism is of such specific application that it is adapted for use with no other art, and not provided for in other subclasses in this class.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 91, Fire tube, Horizontal, Water firebox, Firebox water heater, Trapped circuit, for horizontal fire tube boilers with water heating circulating tubes with a sediment trap; 202, Horizontal cylinder, Water tube, Trapped circuit, for horizontal cylindrical boilers with water heating and circulating tubes provided with a sediment trap; 360, Water tube, Headers, Closures and couplings, for structure of headers for water tube boilers, with hand openings and closures therefor, when the structure of the header is modified; 361, Water tube, Headers, Closures and couplings, Cleaning, for headers provided with special boiler cleaning devices; 364, Water tube, Headers, Closures and couplings, Tube closures, for headers provided with tube closures; 429, Feed heaters, Internal conduit, Automatic sediment valve, and 433, Feed heaters, Internal conduit, Trap outside boiler, for feed heaters with automatically operated valves for reversing the flow of water through the trap when the blow-off is opened; 431, Feed heaters, Internal conduit, Filter in boiler, for feed water heaters with a filter inside the boiler.

62—REFRIGERATION, subclass 31, Heat transferers and conservers, Injected, for water heaters and purifiers by heat only, for boiler purposes.

83—MILLS, subclass 64, Steam-boiler and flue scrapers, for detachable steam boiler and flue scrapers.

137—WATER DISTRIBUTION, subclasses 70, Mains and pipes, Cleaners, for similar scrapers; 97, Nozzles, Tube cleaners, for nozzles for using a steam, air, or water jet for cleaning boilers.

204—ELECTROCHEMISTRY, subclass 25, Electrolysis, Purifying liquids, Water, for purification of water electrolytically, either inside or outside a boiler.

210—WATER PURIFICATION, generally, for purifying water before it is fed to the boiler where a filter or chemicals are employed; and subclasses 19, Filters, Chemical feeders, for devices for feeding chemicals to a boiler or to the feed water conduit leading to the boiler; 21, Steam heater and filter, for heating water and filtering it for boiler purposes before entering the boiler; 22, Boiler compounds, for boiler compounds or mixtures and chemicals for introducing into boilers for preventing the formation of scale or for removing the scale from the boiler when formed; 23, Boiler compound holders for holders or receptacles for containing the boiler compounds adapted to be supported within the boiler.

220—METALLIC SHIPPING AND STORING VESSELS, subclass 124, Tank closures, for boiler manholes and closures.

230—AIR AND GAS PUMPS, subclass 38, Fluid piston, Injectors and aspirators, Tube cleaners, for nozzles having an injector-like action for using steam or air for cleaning boiler tubes.

380. **CLEANING, AGITATING CIRCULATOR.** Boilers having mechanically operated agitators or circulators for the water in the boiler or scrapers so arranged that the sediment will be carried to the clean-out end of the boiler or mud drum.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 411, Circulation, Mechanical, Internal, for mechanical circulating devices within the boiler.

381. **CLEANING, BLOW-OFF, BOTTOM AND SURFACE.** Boilers having means for blowing off the water both at the surface and at the bottom.

382. **CLEANING, BLOW-OFF, BOTTOM.** Boilers provided with means for blowing off the boiler at the bottom and removing the sediment.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 381, Cleaning, Blow-off, Bottom and surface, for devices for blowing off the boiler both at the bottom and the surface of the water.

383. **CLEANING, BLOW-OFF, BOTTOM, INTERNAL CONDUIT.** Boilers having a conduit extending into the boiler along the bottom, either fixed or movable, adapted to remove the sediment.

384. **CLEANING, BLOW-OFF, BOTTOM, INTERNAL CONDUIT, EJECTOR.** Boilers having one or more conduits extending along the bottom of the boiler, provided with a steam ejector.

385. **CLEANING, BLOW-OFF, BOTTOM, INTERNAL CONDUIT, MUD RING.** Boilers provided with an internal conduit located within the water firebox above the mud ring.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 369, Water firebox, Mud ring; 405, Cleaning, Washout nozzle, for analogous art.

386. **CLEANING, BLOW-OFF, BOTTOM, INTERNAL CONDUIT, PAN.** Boilers having a sediment pan or receptacle at the bottom of the boiler and provided with a blow-off conduit communicating with the pan.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 393, Cleaning, Mud drum; 394, Cleaning, Pans, for pans without blow-off conduits.

CLASS 122—Continued.

387. **CLEANING, BLOW-OFF, BOTTOM, INTERNAL CONDUIT, SCRAPER.** Boilers having bottom blow-off conduits extending along the bottom of the boiler, provided with scrapers for removing the incrustation or sediment.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 379, Cleaning, for scrapers attached to the boiler, but movable and not having a blow-off conduit; 384, Cleaning, Blow-off, Bottom, Internal conduit, Ejector.

83—MILLS, subclass 64, Steam boiler and flue scrapers, for mechanical boiler cleaners that are not attached to the boiler.

388. **CLEANING, BLOW-OFF, BOTTOM, INTERNAL CONDUIT, VALVED.** Boilers having a conduit extending along the bottom of the boiler provided with one or more valved ports.

Note.—Compare with subclass 405, Cleaning, Washout nozzle, in this class.

389. **CLEANING, BLOW-OFF, SURFACE EXIT.** Boilers having means for blowing off or removing the surface water of the boiler.

Note.—This subclass contains patents for devices known in the art as "skimmers."

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 400, Cleaning, Trapped circuit, Surface exit, for combinations of skimmers with a trapped circulating conduit.

390. **CLEANING, FLUID JET.** Devices for cleaning boilers of soot and ashes by means of fluid jets when either the structure of the boiler or of the furnace is modified for the reception of the cleaner when in operation.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclass 361, Water tube, Headers, Closures and couplings, Cleaning, for structure of headers with cleaners for water tube boilers.

137—WATER DISTRIBUTION, subclass 97, Nozzles, Tube cleaners, and 230, AIR AND GAS PUMPS, subclass 38, Fluid piston, Injectors and aspirators, Tube cleaners, for fluid jet cleaners of general application.

391. **CLEANING, FLUID JET, HORIZONTAL FIRE-TUBE BOILER.** Devices for cleaning the soot and ashes from a horizontal fire tube boiler by means of fluid jets when the cleaner is attached permanently to the boiler or to the furnace walls.

Search Classes—

110—FURNACES, subclasses 53, Furnace structure, Feeding air and steam; 50, Furnace structure, Feeding air and steam, Horizontal base; 72, Furnace structure, Feeding air; 70, Furnace structure, Feeding steam; 147, Draft regulators, and 150, Draft regulators, Steam injector, for feeding air and steam jets that are intended to aid combustion, but which might also act as fluid jet cleaning devices.

137—WATER DISTRIBUTION, subclass 97, Nozzles, Tube cleaners, and 230, AIR AND GAS PUMPS, subclass 38, Fluid piston, Injectors and aspirators, Tube cleaners, for fluid jet nozzles adapted to clean boiler tubes and walls or any other tubes or walls.

392. **CLEANING, FLUID JET, WATER-TUBE BOILER.** Fluid jet cleaners that are attached either to the boiler or furnace walls of a water tube boiler for blowing the soot and ashes from the boiler.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclass 361, Water tube, Headers, Closures and couplings, Cleaning, for structure of headers.

122—LIQUID HEATERS AND VAPORIZERS, subclasses 275, Water tube, Loop, and 286, Water tube, Over bridge wall, Water grate, Downdraft; and 110, FURNACES, subclasses 53, Furnace structure, Feeding air and steam; 59, Furnace structure, Feeding air and steam, Horizontal base; 72, Furnace structure, Feeding air; 79, Furnace structure, Feeding steam; 98, Furnace structure, Baffles and heat retainers, Water tube boilers; 147, Draft regulators, and 150, Draft regulators, Steam injector, for devices for feeding air and steam to assist the combustion of fuel that would also serve as cleaning jets.

137—WATER DISTRIBUTION, subclass 97, Nozzles, Tube cleaners, and 230, AIR AND GAS PUMPS, subclass 38, Fluid piston, Injectors and aspirators, Tube cleaners, for fluid jet nozzles adapted to clean boiler or any other tubes.

393. **CLEANING, MUD DRUM.** The structure of mud drums and the necessary modification in the boiler structure for their application.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, the type subclasses, for special types of boilers with mud drums in combination; subclasses 52, Fire tube, Horizontal, Plural; 137, Flue, Horizontal, Plural, and 259, Water tube, Drum type; 192, Horizontal cylinder, Water bridge wall, for drums forming bridge walls for horizontal cylindrical boilers; 363, Water tube, Headers, Closures and couplings, Drum, and 365, Water tube, Drums and couplings, for water tube boiler drums; 444, Feed heaters, Water tube boiler, for drums for water tube boilers with special feed heating means.

394. **CLEANING, PANS.** Receptacles, either open at the top or closed, but having openings for the passage of water there-through, for receiving the sediment precipitated from the water. The pan may have a conduit leading to the mud drum.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 386, Cleaning, Blow-off, Bottom, Internal conduit, Pan, for pans with blow-off conduits leading from the pan to the outside of the boiler; 393, Cleaning, Mud drum, for comparison; 430, Feed heaters, Internal conduit, Blow-off delivery.

CLASS 122—Continued.

395. **CLEANING, SAND BLAST.** Sand blast cleaning devices that must of necessity be used with a boiler.

Search Classes—

51—GRINDING AND POLISHING, subclasses 3, Glass and stone, Curved surfaces, and 18, File cleaning and reshaping, Sand blast, and 230, AIR AND GAS PUMPS, subclass 26, Sand blowers, for devices of this nature, some of which were intended to be used as boiler cleaners, but which are of general application.

396. **CLEANING, SYSTEMS.** Apparatus and processes for cleaning and filling boilers where an interchange of heat is effected between the blow-off water and the clean filling water.

Search Classes—

62—REFRIGERATION, subclass 29, Heat transferers and conservers, and the subclasses thereunder, for special features.

397. **CLEANING, TRAPPED CIRCUIT.** Boilers provided with one or more conduits, through which the boiler water is caused to pass, and having some form of trap or filter in the circuit, after passing which the water is returned to the boiler.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 91, Fire tube, Horizontal, Water firebox, Firebox water heater, Trapped circuit, and 202, Horizontal cylinder, Water tube, Trapped circuit, for boilers also having trapped circuits; 414, Feed heaters, Boiler circuit, Feed injected, and 415, Feed heaters, Circulation, Surface exit, Mechanical pump, Feed injected, for circulation features without the sediment trap.

398. **CLEANING, TRAPPED CIRCUIT, FEEDING WATER.** Boilers provided with a water circulating conduit having a sediment trap therein so arranged that boiler water will circulate therethrough, with means for introducing feed water into the circulating conduit.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 403, Cleaning, Trapped circuit, Surface exit, Feed heater, for similar art; 414, Feed heaters, Boiler circuit, Feed injected, for similar arrangement of conduit with feed water introduction without the sediment trap.

399. **CLEANING, TRAPPED CIRCUIT, SURFACE AND BOTTOM EXIT.** Such mechanism as is defined in subclass 397 above, with means for withdrawing the water from the boiler into the circulation conduits from the top or the bottom, or both.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 202, Horizontal cylinder, Water tube, Trapped circuit; 381, Cleaning, Blow-off, Bottom and surface, for blow-off devices taking the water from either the surface or the bottom; 382, Cleaning, Blow-off, Bottom, and the subclasses thereunder, for special features of outlets; 389, Cleaning, Blow-off, Surface exit, for surface blow-off devices and for "skimmers" adapted to be used on the surface outlets of the circuit devices of this subclass.

400. **CLEANING, TRAPPED CIRCUIT, SURFACE EXIT.** Boilers with circulating conduits, through which water is caused to pass from the surface thereof and to be returned to the boiler after passing through a trap or filter.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 91, Fire tube, Horizontal, Water firebox, Firebox water heater, Trapped circuit, and 202, Horizontal cylinder, Water tube, Trapped circuit; 389, Cleaning, Blow-off, Surface exit, for the structure of what are technically known as "skimmers"; 399, Cleaning, Trapped circuit, Surface and bottom exit, for combination of surface and bottom outlets to a trapped circuit; 415, Feed heaters, Circulation, Surface exit, Mechanical pump, Feed injected, for surface exit circulating circuits without a trap in the circuit, but having a forced circulation by means of a mechanical pump, with feed water introduced into the circuit.

401. **CLEANING, TRAPPED CIRCUIT, SURFACE EXIT, CHEMICAL FEEDER.** Boilers having a conduit communicating with the boiler to form a circuit and so arranged that the surface water in the boiler will flow through the circuit, which is provided with a sediment trap, the circuit having means for feeding a chemical or some composition thereto for precipitating the salts in the water.

Search Class—

210—WATER PURIFICATION, subclass 19, Filters, Chemical feeders, for chemical feeders for boilers.

402. **CLEANING, TRAPPED CIRCUIT, SURFACE EXIT, CIRCULATING PUMP.** Boilers having a circuit provided with a sediment trap and a circulating pump, which conduit is arranged to receive boiler water near the surface and to return it to the boiler after passing it through the trap.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 404, Cleaning, Trapped circuit, Surface exit, Steam injector, for similar arrangement of conduit and trap, with a steam jet for circulating the water.

403. **CLEANING, TRAPPED CIRCUIT, SURFACE EXIT, FEED HEATER.** Boilers provided with a conduit, into which the surface water in the boiler flows, the conduit having a trap for extracting the sediment as the water passes through it and the water being returned to the boiler, and also having in combination therewith a heater for the feed water.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 415, Feed heaters, Circulation, Surface exit, Mechanical pump, Feed injected, for allied art without the sediment trap.

CLASS 122—Continued.

404. **CLEANING, TRAPPED CIRCUIT, SURFACE EXIT, STEAM INJECTOR.** Boilers having a water circulating conduit provided with a sediment trap, through which the surface water of the boiler flows, the circulation being aided by means of a steam jet located at some point of the circuit.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 384, Cleaning, Blow-off, Bottom, Internal conduit, Ejector, for steam jet blow-offs; 402, Cleaning, Trapped circuit, Surface exit, Circulating pump, for this subject matter where the circulation is maintained by a mechanical pump.

405. **CLEANING, WASHOUT NOZZLE.** Nozzles or conduits having one or more discharge orifices, either permanently attached to the inside of the boiler or of such structure that they are not of general application in other arts, for washing the sediment from the tubes or boiler walls.

Search Classes—

- 122—LIQUID HEATERS AND VAPORIZERS, subclass 383, Cleaning, Blow-off, Bottom, Internal conduit, for structures that are also adapted to serve as washout nozzles.

- 137—WATER DISTRIBUTION, subclasses 17, Nozzles; 57, Nozzles, Splasher, and 97, Nozzles, Tube cleaners, for structure of nozzles.

406. **CIRCULATION.** Devices not otherwise classified for regulating the circulation of water in the boiler.

Note.—Circulation devices in combination with means for cleaning the boiler or purifying the water, except those noted below, are classified in subclasses 379, Cleaning; 380, Cleaning, Agitating circulator; 393, Cleaning, Mud drum; 394, Cleaning, Pans, and 397, Cleaning, Trapped circuit, and the subclasses thereunder, in this class.

Search Classes—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 11, Rotary, for rotary boilers; 36, Auxiliary steam heater, and 407, Circulation, Injector, for steam and water jets that help the circulation; 39, Film; 59, Fire tube, Horizontal, Drop water firebox, Circulation conduit, for horizontal fire tube boilers with a drop water firebox having a conduit located either outside or inside the boiler for aiding the circulation; 69, Fire tube, Horizontal, Drop water firebox, Water tube, Feed heater, Check valve, and 196, Horizontal cylinder, Water tube, Feed heater, Check valve, where the boiler circulation ceases through certain parts when feed water is fed to the boiler and the parts serve as a feed water heater; 83, Fire tube, Horizontal, Transverse diaphragm, for horizontal boilers with fire tubes having transverse diaphragms for assisting the circulation; 91, Fire tube, Horizontal, Water firebox, Firebox water heater, Trapped circuit; 118, Fire tube, Vertical, Circulation tube, Internal, and 159, Flue, Vertical, Circulation tube, Internal, for vertical fire tube and vertical flue boilers with internal tubes or sleeves for increasing the circulation; 123, Fire tube, Vertical, Separate compartment, for vertical fire tube boilers with transverse diaphragms; 202, Horizontal cylinder, Water tube, Trapped circuit, for horizontal cylindrical boilers having a sediment trap through which the water circulates; 258, Water tube, Down flow, for boilers in which the circulation is downward through water tubes; 292, Water tube, Rearwardly declined, Over bridge wall, Front and rear header, Horizontal longitudinal drum, Firebox tube; 366, Wick, for absorbent wicks, within the boiler space; 414, Feed heaters, Boiler circuit, Feed injected; 415, Feed heaters, Circulation, Surface exit, Mechanical pump, Feed injected; 418, Feed heaters, Fire engine boiler, Auxiliary, Attached; 419, Feed heaters, Fire engine boiler, Auxiliary, Detachable; 428, Feed heaters, Internal conduit, and the subclasses thereunder; 442, Feed heaters, Steam, Injected, and 444, Feed heaters, Water tube boiler, for circulation features combined with the heating and introduction of feed waters; 488, Separators, Boiler circulation, for combined separators for steam and circulation devices; 495, Crown sheet protecting, for circulation devices for protecting the crown sheet; 501, Fluid displacer, and 502, Fluid displacer, Fluid fuel, for displacing elements within water tubes.

- 103—PUMPS, for structure of pumps.

407. **CIRCULATION, INJECTOR.** Boilers provided with an injector or tubes connected in such a manner as to act like an injector and having means for heating part of the water to a higher temperature in a separate compartment or conduit that delivers the water heated in the separate compartment to the injector for increasing the circulation.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 36, Auxiliary steam heater; 292, Water tube, Rearwardly declined, Over bridge wall, Front and rear header, Horizontal longitudinal drum, Firebox tube; 384, Cleaning, Blow-off, Bottom, Internal conduit, Ejector; 398, Cleaning, Trapped circuit, Feeding water; 404, Cleaning, Trapped circuit, Surface exit, Steam injector; 414, Feed heaters, Boiler circuit, Feed injected; 415, Feed heaters, Circulation, Surface exit, Mechanical pump, Feed injected, and 444, Feed heaters, Water tube boiler, for related art on the injector action.

408. **CIRCULATION, INTERNAL CONDUIT.** Boilers having conduits located inside the boiler and generally below the water line for accelerating the circulation of the water in the boiler. These conduits may consist of tubes, inverted bells, cylinders, or even plates spaced apart from each other or spaced from the boiler walls or tubes.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 36, Auxiliary steam heater, and 407, Circulation, Injector, for special types of circulating devices; 59, Fire tube, Horizontal, Drop water firebox, Circulation conduit, for conduits, either internal or external, for aiding the circulation of horizontal fire tube boilers with a drop water firebox; 83, Fire tube, Horizontal,

CLASS 122—Continued.

Transverse diaphragm, for plates or diaphragms, arranged transversely of a horizontal fire tube boiler for aiding the circulation; 115, Fire tube, Vertical, Circulation tube, Internal, for internal circulation tubes, cylinders, or sleeves for vertical fire tube boilers; 159, Flue, Vertical, Circulation tube, Internal, for internal circulation tubes, cylinders, or sleeves for vertical flue boilers; 379, Cleaning, and the subclasses thereunder, for internal circulating conduits combined with water purifying and boiler cleaning apparatus; 412, Feed heaters, and subclasses thereunder, for circulation features combined with feed water heaters; 488, Separators, Boiler circulation, for circulation devices combined with a steam separator.

409. **CIRCULATION, INTERNAL CONDUIT, HORIZONTAL FLUE BOILER.** Circulation conduits for the interior of horizontal large flue boilers.

410. **CIRCULATION, INTERNAL CONDUIT, HORIZONTAL FLUE BOILER, RETURN FIRE-TUBE.** Internal conduits for horizontal flue boilers having return fire tubes.

411. **CIRCULATION, MECHANICAL, INTERNAL.** Mechanical devices located inside boilers for circulating or agitating the water.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclass 380, Cleaning, Agitating circulator, for agitators and water circulators of a mechanical type when they have the additional function of removing sediment from the boiler or transferring it from one part of the boiler to another.

412. **FEED-HEATERS.** Miscellaneous feed water heaters for boilers.

Note.—In order that devices for heating feed water shall be classified in any of the boiler subclasses they must be so intimately connected and combined with the boiler structure that they are inseparable therefrom or not of general application for heating water and not excluded therefrom by the main definition of this class.

Note.—The following subclasses noted will assist in finding structures where there is structure of the boiler claimed with incidental heating of the feed water. Note is also made of devices for heating water that may be used for boiler purposes or for any other purpose, which devices are not classifiable in this class.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 1, Plants, and 3, Plants, Motor vehicle, for combinations of feed heaters with other elements that form a boiler plant; 20, Subsidiary, for structure of devices for heating water that could readily be applied for heating feed water, (this is a very closely related subclass); 36, Auxiliary steam heater, for boilers having means for heating the water by steam jets or tubes before the boiler is fired up; 37, Compartment, disclosing boilers having separate compartments, one compartment being used for impure water full of mud or salt, the steam passing to the other compartment which contains purified water, and feed heaters; 40, Flasher, and 41, Flasher, Fluid fuel, for flash boilers having a preheater for the water intimately associated with the flash boiler; 62, Fire tube, Horizontal, Drop water firebox, Front and rear water baffle; 63, Fire tube, Horizontal, Drop water firebox, Front water baffle, and 65, Fire tube, Horizontal, Drop water firebox, Rear water baffle, for heating water introduced into the heaters in the firebox; 68, Fire tube, Horizontal, Drop water firebox, Water tube, and 69, Fire tube, Horizontal, Drop water firebox, Water tube, Feed heater, Check valve; 69, Fire tube, Horizontal, Drop water firebox, Water tube, Feed heater, Check valve, and 196, Horizontal cylinder, Water tube, Feed heater, Check valve, for boilers provided with heating tubes through which the boiler water circulates and is heated, but when the feed water is being fed to the boiler the boiler circulation is stopped by means of automatically operated valves and the feed water is heated in the tubes before it is conducted to the main part of the boiler; 82, Fire tube, Horizontal, Superjacent feed heater, In communication, for horizontal fire tube boilers with superposed feed water heaters in open communication with the boiler, delivering water to the bottom of the boiler from the feed heater; 83, Fire tube, Horizontal, Transverse diaphragm, and 123, Fire tube, Vertical, Separate compartment, for horizontal fire tube and vertical fire tube boilers, respectively, that have transverse diaphragms, the feed water entering the compartment farthest from the firebox and being progressively heated as it approaches the firebox; 89, Fire tube, Horizontal, Water arch, Rear of fire tube, for water arches at the rear of horizontal fire tube boilers that serve as feed water heaters; 106, Fire tube, Horizontal, Water wall, for horizontal fire tube boilers having water walls that may be used as a feed water heater; 118, Fire tube, Vertical, Circulation tube, Internal, and 159, Flue, Vertical, Circulation tube, Internal, for special types; 125, Fire tube, Vertical, Top water chamber, for similar structure for feed heaters; 151, Flue, Horizontal, Return fire tube, Water smokebox, Separate, for horizontal flue boilers having return fire tubes, with a smokebox closure having a separate compartment that may serve as a feed water heater; 189, Horizontal cylinder, Offset subadjacent firebox, Water roof; 190, Horizontal cylinder, Offset subadjacent firebox, Water tube; 193, Horizontal cylinder, Water firebox; 194, Horizontal cylinder, Water firebox, Water tube type, and 202, Horizontal cylinder, Water tube, Trapped circuit, where water is introduced into a certain part of the structure before passing to the main part of the boiler; 192, Horizontal cylinder, Water bridge wall, for water bridge walls and drums where water is introduced and heated; 195, Horizontal cylinder, Water tube, and the subclasses thereunder, for means for heating feed water when it is introduced, (these are really main boiler structures with means for inci-

CLASS 122—Continued.

dentally heating the water when it is introduced before it enters the horizontal cylinder); 371, Water grate, and the subclasses thereunder, (water grates used as feed water heaters will be found in the various types of boilers having water grates; a complete list of boilers with water grates is given in the notes to subclass 371, Water grate); 379, Cleaning, and the subclasses thereunder, for feed water heaters combined with boiler cleaning devices, traps, and filters; 396, Cleaning, Systems, for combined cleaning and feed water heating system where the blow-off water is used to heat the feed water when refilling the boiler, (Especially used for cleaning and filling locomotive boilers); 398, Cleaning, Trapped circuit, Feeding water, for boilers having a circulating conduit provided with a sediment trap or filter, the water being introduced into the circulating conduit; 403, Cleaning, Trapped circuit, Surface exit, Feed heater, for feed heaters having a sediment trap, (compare also subclasses 91, Fire tube, Horizontal, Water firebox, Firebox water heater, Trapped circuit, and 202, Horizontal cylinder, Water tube, Trapped circuit); 454, Feeders, Exhaust steam, Water injected, for heating feed water by mixing it with exhaust steam as it is being returned to the boiler; 457, Feeders, Gravity, Automatic, Heater, and 458, Feeders, Gravity, Heater, for gravity boiler feeders with incidental feed water heater; 477, Steam treatment, Water tube boiler, Superheater and feed heater, for combination of a water tube boiler with a steam superheater and a feed water heater; 494, Casings, for surrounding casings to prevent radiation of heat from a boiler which heats feed water; 498, Fronts, Doors, for water-cooled doors for heating feed water; 499, Fronts, Mouths, and 500, Fronts, Mouths, Water firebox, for furnace mouths or fuel door openings provided with water heaters and used for heating feed water; 497, Fronts, for feed heating furnace and boiler fronts.

62—REFRIGERATION, subclasses 29, Heat transferers and conservers; 30, Heat transferers and conservers, Surface, and 31, Heat transferers and conservers, Injected, for water heaters heated by steam where no filter is claimed, although a filter may be disclosed; 32, Heat transferers and conservers. One fluid, for structures of general application, although a feed water heater located in a furnace offtake flue may be disclosed.

210—WATER PURIFICATION, subclasses 1, Miscellaneous, and 21, Steam heater and filter, for water heaters provided with a filter, heated by steam.

413. FEED-HEATERS, ASH PAN. Feed heaters that are either located in the ash pan or ash box or form part of the structure thereof.

414. FEED-HEATERS, BOILER CIRCUIT, FEED INJECTED. Boilers having a conduit in circuit with the boiler, with means for introducing feed water into the circuit, thereby mixing the feed with the boiler water before introduction.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 398, Cleaning, Trapped circuit, Feeding water, and 403, Cleaning, Trapped circuit, Surface exit, Feed heater; 415, Feed heaters, Circulation, Surface exit, Mechanical pump, Feed injected; structural subclasses of boilers generally for the special structure of boilers having means for introducing feed water into certain parts of the boiler circulating system.

415. FEED-HEATERS, CIRCULATION, SURFACE EXIT, MECHANICAL PUMP, FEED INJECTED. Boilers provided with a circulating conduit communicating with the boiler at the water level, having a mechanical pump in the circuit for withdrawing water from the boiler at the water line and returning it to the boiler at some other point and having means for heating the feed water by means of either the surface or jet type and injecting the feed water into the boiler or conduit, but so arranged that the water level in the boiler will be maintained.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 398, Cleaning, Trapped circuit, Feeding water; 402, Cleaning, Trapped circuit, Surface exit, Circulating pump; 403, Cleaning, Trapped circuit, Surface exit, Feed heater; 406, Circulation, for combinations of circulating pump with boiler; 414, Feed heaters, Boiler circuit, Feed injected, for feed water introduced into the circuit.

103—PUMPS, for type of pump.

416. FEED-HEATERS, COMPOUND ENGINE. Feed water boilers combined with compound engines.

417. FEED-HEATERS, DRIP PLATE IN BOILER. Feed heaters located in the steam space of the boiler, consisting of plates or receptacles superimposed in such a way that the feed water falls from one to the other. The heater may or may not have means for trapping the sediment and blowing it out of the boiler.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 435, Feed heaters, Pan in steam space; 436, Feed heaters, Pan in steam space, Spray, and 438, Feed heaters, Spray to steam space; 442, Feed heaters, Steam, Injected, and 443, Feed heaters, Steam, Injected, Superposed, Open to steam space; **62, REFRIGERATION**, subclass 31, Heat transferers and conservers, Injected, and **210, WATER PURIFICATION**, subclasses 1, Miscellaneous and 21, Steam heater and filter, for structure of plates and receptacles.

418. FEED-HEATERS, FIRE ENGINE BOILER, AUXILIARY, ATTACHED. Combinations of fire engine boilers with a water heater attached to the boiler or some part of the apparatus for keeping the water in the boiler hot when the boiler is not fired up.

CLASS 122—Continued.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, the structural subclasses, for the structure of the heating boiler.

419. FEED-HEATERS, FIRE ENGINE BOILER, AUXILIARY, DETACHABLE. Water heaters for keeping the water in a fire engine boiler hot when the fire engine is in the engine house and the firebox is not in use, which consist of a stationary water heater located in the engine house, adapted to be coupled to the fire engine boiler to establish a water circulation.

Search Class—

237—HEAT DISTRIBUTING SYSTEMS, subclasses 9, Steam, and 15, Water, for combinations of this heating device with the heating system of the engine house.

420. FEED-HEATERS, FURNACE GASES. Feed water heaters which are heated by furnace gases only not within the definitions of other subclasses.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, the structural subclasses under the different types of boilers for feed heaters heated by furnace gases where the heater forms a part of the boiler and boiler water circulates therethrough, except when the feed water is being fed to the feed water heating section; subclasses 40, Flasher, and 41, Flasher, Fluid fuel, for flash boilers with preheaters for the water; 68, Fire tube, Horizontal, Drop water firebox, Water tube; 82, Fire tube, Horizontal, Superjacent feed heater, In communication; 83, Fire tube, Horizontal, Transverse diaphragm; 89, Fire tube, Horizontal, Water arch, Rear of fire tube; 106, Fire tube, Horizontal, Water wall, 123, Fire tube, Vertical, Separate compartment, and 151, Flue, Horizontal, Return fire tube, Water smokebox, Separate; 69, Fire tube, Horizontal, Drop water firebox, Water tube, Feed heater, Check valved; 196, Horizontal cylinder, Water tube, Feed heater, Check valved, and 412, Feed heaters, for feed heaters that form part of the water heating section of the boiler, but that are automatically converted into a feed water heater when water is being fed to the boiler and the boiler circulation is suspended; 195, Horizontal cylinder, Water tube, and the subclasses thereunder, for horizontal cylindrical boilers with circulating tubes, into which feed water is fed and heated; 371, Water grate and the subclasses listed in the search notes thereunder, for water grates that serve as feed water heaters; 412, Feed heaters, and the subclasses listed in the search notes thereunder for further directions as to feed water heaters; 412, Feed heaters, and the subclasses thereunder, for special types of feed heaters; 497, Fronts, and the subclasses thereunder.

62—REFRIGERATION, subclass 32, Heat transferers and conservers. One fluid, for feed heaters claimed as of general application for heat transference, although disclosed located in a furnace offtake flue.

421. FEED-HEATERS, FURNACE GASES, OFFTAKE FLUE. Feed water heaters not of general application in other arts for heat transference, located in the waste heat flue or "offtake" flue of the boiler, between the boiler and the smokestack.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclass 20, Subsidiary, for very similar art for heating water; 82, Fire tube, Horizontal, Superjacent feed heater, In communication; 83, Fire tube, Horizontal, Transverse diaphragm, and 123, Fire tube, Vertical, Separate compartment; 412, Feed heaters, the search notes thereunder, and 420, Feed heaters, Furnace gases.

62—REFRIGERATION, subclass 32, Heat transferers and conservers. One fluid, for structure of general application for transferring heat from one fluid to another.

422. FEED-HEATERS, FURNACE GASES AND STEAM. Feed water heaters heated by furnace gases and steam not within other definitions.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 403, Cleaning, Trapped circuit, Surface exit, Feed heater; 425, Feed heaters, Horizontal fire tube boiler, Smokebox, Furnace gases and steam; 432, Feed heaters, Internal conduit, Furnace gases; 434, Feed heaters, Locomotive tender, and 440, Feed heaters, Stack, Furnace gases and steam, for special types of heaters of this nature.

423. FEED-HEATERS, HORIZONTAL FIRE TUBE BOILER, SMOKEBOX. Feed water heaters for horizontal fire tube boilers having a feed heater, located either within the smokebox or forming a part of the smokebox structure.

Note.—A "smokebox" is distinguished from a "smoke chamber" in that the former consists of a closed chamber at the end of the boiler, into which the products of combustion pass directly from the fire tubes and thence to the smokestack, while a "smoke chamber" is a chamber at the end of the boiler, into which the products of combustion enter either from the fire tubes or from the flue outside of the boiler and do not pass directly out of the chamber, but may return through other boiler flues.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 151, Flue, Horizontal, Return fire tube, Water smokebox, Separate.

424. FEED-HEATERS, HORIZONTAL FIRE TUBE BOILER, SMOKEBOX, EXHAUST PIPE. Feed water heaters located in the smokebox of a horizontal fire tube boiler consisting of a water-jacketed exhaust "lift" pipe.

425. FEED-HEATERS, HORIZONTAL FIRE TUBE BOILER, SMOKEBOX, FURNACE GASES AND STEAM. Feed water heaters located at the smokebox end of the boiler, heated both by furnace gases and by steam, which may or may not come into contact with the feed water.

CLASS 122—Continued.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 83, Fire tube Horizontal, Transverse diaphragm; 101, Fire tube, Horizontal, Water smokebox, and 151, Flue, Horizontal, Return fire tube, Water smokebox, Separate, for general structure; 422, Feed heaters, Furnace gases and steam; 432, Feed heaters, Internal conduit, Furnace gases, and 440, Feed heaters, Stack, Furnace gases and steam, for other types of feed heaters heated by furnace gases and steam in combination.

426. FEED-HEATERS, HORIZONTAL FIRE-TUBE BOILER, SMOKEBOX, WATER TUBE. Feed water heaters located at the smokebox end of a horizontal fire tube boiler, consisting of either water tubes located in the smokebox or of a water walled casing, forming the smokebox, provided with water tubes.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclass 465, Steam treatment, Fire tube boiler, Horizontal, Superheater, Smokebox, Steam tube.

427. FEED-HEATERS, HORIZONTAL FIRE-TUBE BOILER, SMOKE CHAMBER. Feed heaters for horizontal fire tube boilers located in the smoke chamber at the rear of the boiler or having one side exposed to the heat of the products of combustion as they pass through the chamber.

Note.—For distinction between “smokebox” and “smoke chamber,” see note to subclass 423.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 89, Fire tube, Horizontal, Water arch, Rear of fire tube; 151, Flue, Horizontal, Return fire tube, Water smokebox, Separate, and 403, Cleaning, Trapped circuit, Surface exit, Feed heater; 479 to 487, Steam superheaters, for structure.

428. FEED-HEATERS, INTERNAL CONDUIT. Boilers provided with a conduit located inside the boiler for heating the water before it is finally delivered to the boiler from the conduit. The feed water may or may not be mixed with boiler water or steam before its final delivery to the boiler.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 36, Auxiliary steam heater; 444, Feed heaters, Water tube boiler, where feed water is injected into the boiler water tubes for heating the water and increasing circulation.

429. FEED-HEATERS, INTERNAL CONDUIT, AUTOMATIC SEDIMENT VALVE. Heating conduits for feed water located inside the boiler, having a sediment trap provided with one or more valves automatically operated when the blow-off valve of the trap is opened to change the course of flow of the water and clear the trap of sediment.

430. FEED-HEATERS, INTERNAL CONDUIT, BLOW-OFF DELIVERY. Boilers provided with an internal conduit for heating the feed water and delivering it toward the blow-off end or mud drum of the boiler.

431. FEED-HEATERS, INTERNAL CONDUIT, FILTER IN BOILER. Boilers provided with a filter on the feed water conduit, both of which are located inside the boiler.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 428, Feed heaters, Internal conduit, and 429, Feed heaters, Internal conduit, Automatic sediment valve, for traps inside the boiler.

432. FEED-HEATERS, INTERNAL CONDUIT, FURNACE GASES. Boilers having a feed water heater of the internal conduit type and furnace gas type connected in series—that is, the water is heated in a conduit heated by the products of combustion and then passes into a conduit within the boiler, where it is heated before delivery thereto, or is heated in conduits passing through the boiler and then in a furnace gas heated chamber or conduit and then delivered to the boiler.

433. FEED-HEATERS, INTERNAL CONDUIT, TRAP OUTSIDE BOILER. Boilers having a feed water heating conduit within the boiler, with a trap or filter outside the boiler, through which the water passes before it enters the feed heater.

434. FEED-HEATERS, LOCOMOTIVE TENDER. Water heaters combined with the water tank of a locomotive tender.

435. FEED-HEATERS, PAN IN STEAM SPACE. Boilers having an open receptacle or pan located within the steam space of the boiler, in which water is fed and heated. The pan may be provided with devices for intercepting the sediment that is precipitated and for blowing it off.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 417, Feed heaters, Drip plate in boiler; 436, Feed heaters, Pan in steam space, Spray, and 438, Feed heaters, Spray to steam space, for structure of pans and sprayers.

436. FEED-HEATERS, PAN IN STEAM SPACE, SPRAY. Boilers having an open pan or receptacle located in the steam space of the boiler, with means for spraying feed water to the pan. The pan is generally provided with means for collecting the sediment and blowing it off.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 417, Feed heaters, Drip plate in boiler; 435, Feed heaters, Pan in steam space, and 438, Feed heaters, Spray to steam space, for structure of pans and nozzles and sprayers.

CLASS 122—Continued.

437. FEED-HEATERS, SAFETY VALVE. Boilers having a conduit leading from the safety valve to a water receptacle for heating the water when the steam escapes from the safety valve.

438. FEED-HEATERS, SPRAY TO STEAM SPACE. Boilers provided with means for spraying water into the steam space of the boiler.

Search Classes—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 417, Feed heaters, Drip plate in boiler, and 436, Feed heaters, Pan in steam space, Spray, for structure of spraying devices.

- 137—WATER DISTRIBUTION, subclasses 17, Nozzles; 57, Nozzles, Splasher; 80, Sprayers; 81, Sprayers, Cap; 83, Sprayers, Rose, and 87, Sprayers, Reaction, for structure of nozzles.

439. FEED-HEATERS, STACK. Feed water heaters either forming part of the stack or located in the smokestack.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 20, Subsidiary, for water heaters of general application located in the smokestack or chimney; 123, Fire tube, Vertical, Separate compartment; 440, Feed heaters, Stack, Furnace gases and steam, for stack feed water heaters heated by both furnace gases and steam.

440. FEED-HEATERS, STACK, FURNACE GASES AND STEAM. Feed water heaters located in the smokestack or chimney or forming a part thereof, in which the water is heated both by the furnace gases and by steam. The steam may or may not come into contact with the water.

441. FEED-HEATERS, STEAM. Boilers having means for heating the feed water by means of live or exhaust steam, not within the definitions of other subclasses.

Search Classes—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 398, Cleaning, Trapped circuit, Feeding water, and 403, Cleaning, Trapped circuit, Surface exit, Feed heater, for combinations of boiler feed heaters and cleaners; 412, Feed heaters, and as indicated in the search notes thereunder; 416, Feed heaters, Compound engine; 422, Feed heaters, Furnace gases and steam; 425, Feed heaters, Horizontal fire tube boiler, Smokebox, Furnace gases and steam; 432, Feed heaters, Internal conduit, Furnace gases; 434, Feed heaters, Locomotive tender, and 440, Feed heaters, Stack, Furnace gases and steam, for combinations of steam heaters and feed heaters heated by furnace gases; 453, Feeders, Exhaust steam, and 457, Feeders, Gravity, Automatic, Heater.

- 62—REFRIGERATION, subclasses 29, Heat transferers and conservers, and 30, Heat transferers and conservers, Surface, for water heaters heated by steam out of contact with the water.

- 126—STOVES AND FURNACES, subclasses 370, Water heaters, Vessels, Steam or water heated, and 371, Water heaters, Vessels, Steam or water heated, Closed chamber or coil.

- 210—WATER PURIFICATION, subclasses 1, Miscellaneous, and 21, Steam heater and filter, for water heaters with a filter, claimed in combination.

442. FEED-HEATERS, STEAM, INJECTED. Boilers provided with means for heating the feed water by live or exhaust steam coming into contact with the water.

Note.—This is a miscellaneous subclass for steam injected feed water heaters not otherwise provided for.

Search Classes—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 434, Feed heaters, Locomotive tender; 435, Feed heaters, Pan in steam space; 436, Feed heaters, Pan in steam space, Spray; 437, Feed heaters, Safety valve; 438, Feed heaters, Spray to steam space; 443, Feed heaters, Steam, Injected, Superposed, Open to steam space, and 444, Feed heaters, Water tube boiler, for special types of heaters; 454, Feeders, Exhaust steam, Water injected, and 455, Feeders, Exhaust steam, Water injected, From boiler, for devices for mixing water with exhaust steam and returning it to the boiler; 457, Feeders, Gravity, Automatic, Heater, and 458, Feeders, Gravity, Heater, and search note thereunder, for devices for mixing water with exhaust steam and returning it to the boiler.

- 62—REFRIGERATION, subclass 31, Heat transferers and conservers, Injected, for feed water heaters and purifiers not connected with the boiler structure, of the steam injected type.

- 126—STOVES AND FURNACES, subclass 372, Water heaters, Vessels, Steam or water heated, Jet.

- 210—WATER PURIFICATION, subclasses 1, Miscellaneous, and 21, Steam heater and filter, for feed water heaters of the steam injected type provided with a filter.

443. FEED-HEATERS, STEAM, INJECTED, SUPERPOSED, OPEN TO STEAM SPACE. Closed chambers or receptacles located over the boiler and in open communication with the steam space, having means for injecting water thereto that it may be heated by contact with the steam before it enters the boiler.

Search Classes—

- 122—LIQUID HEATERS AND VAPORIZERS, subclasses 425, Feed heaters, Horizontal fire tube boiler, Smokebox, Furnace gases and steam, and 442, Feed heaters, Steam, Injected, for similar parts.

- 62—REFRIGERATION, subclass 31, Heat transferers and conservers, Injected, and 210, WATER PURIFICATION, subclasses 1, Miscellaneous, and 21, Steam heater and filter, for similar internal structure of the heater.

CLASS 122—Continued.

444. **FEED-HEATERS, WATER-TUBE BOILER.** Miscellaneous combinations of means for heating the feed water in a water tube boiler, whether the water be heated outside or inside the water space of the boiler, not defined in other sub-classes.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclasses 347, Water tube, Vertical, Beyond bridge wall, Longitudinal upper drum, Longitudinal lower drum; 355, Water tube, Drums and couplings, for disclosures of feed water heating devices within the steam and water drum of a water tube boiler; 413, Feed heaters, Ash pan; 414, Feed heaters, Boiler circuit, Feed injected; 415, Feed heaters, Circulation, Surface exit, Mechanical pump, Feed injected; 417, Feed heaters, Drip plate in boiler; 420, Feed heaters, Furnace gases; 421, Feed heaters, Furnace gases, Offtake flue; 422, Feed heaters, Furnace gases and steam; 428, Feed heaters, Internal conduit, and the subclasses thereunder; 435, Feed heaters, Pan in steam space; 436, Feed heaters, Pan in steam space, Spray; 438, Feed heaters, Spray to steam space; the subclasses under Feed heaters, Horizontal fire tube boiler; 439, Feed heaters, Stack; 440, Feed heaters, Stack, Furnace gases and steam, and 441, Feed heaters, Steam, and the subclasses thereunder, for heaters disclosed for water tube boilers where the invention is of general application to all types of boilers; 477, Steam treatment, Water tube boiler, Superheater and feed heater, for combinations of feed heaters and superheaters.

445. **REGULATION, DEPENDING ON LOAD.** Apparatus for controlling the generation of steam depending upon the load put upon the motor.

Note.—This may be accomplished by regulating the combustion of the fuel, or controlling the feed of water to the boiler by variations of pressure in the steam main or motor cylinder, or by variations in the velocity of the moving parts operated by the motor, or by variations in the resistance to the motor.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, the subclasses under Regulation, Fuel and water, Automatic control, and subclass 452, Feeders, Boiler pressure; subclasses 40, Flasher, and 41, Flasher, Fluid fuel; and **60, MISCELLANEOUS HEAT ENGINE PLANTS**, especially for control of fuel and water where the products of combustion mix with the steam.

110—FURNACES, subclasses 54, Furnace structure, Feeding air and steam, Boiler controlled, and 153, Draft regulators, Exhaust nozzle, Variable discharge, Boiler controlled; **158, LIQUID AND GASEOUS FUEL BURNERS**, subclass 36, Burners, Liquid fuel, Fuel feeding, and **236, DAMPERS, AUTOMATIC**, for control of combustion, depending upon boiler conditions.

446. **REGULATION, FUEL AND WATER, FLUID FUEL.** Devices for feeding both fluid fuel to the burner and water to the boiler that are not automatically regulated.

Search Classes—

103—PUMPS, subclass 85, Regulators, and the subclasses thereunder, for the pump controllers for boilers.

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 36, Burners, Liquid fuel, Fuel feeding, for fuel supply systems.

447. **REGULATION, FUEL AND WATER, FLUID FUEL, CUT-OFF.** Devices for controlling the supply of feed water to the boiler, which is heated by fluid fuel, with automatic mechanism for cutting off the fuel supply when the water level in the boiler becomes either too high or too low or both.

Search Classes—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 36, Burners, Liquid fuel, Fuel feeding, and **236, DAMPERS, AUTOMATIC**, for similar art on fuel control.

236—DAMPERS, AUTOMATIC, subclasses 15, Expansion, Liquid level, Trip valve, and 16, Fusible.

448. **REGULATION, FUEL AND WATER, AUTOMATIC CONTROL, FLUID FUEL.** Devices for controlling automatically both the feed of fluid fuel to the burner and the feed of water to the boiler.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclass 452, Feeders, Boiler pressure; subclasses under subclass 451, Feeders, for water feeders, and see the search notes thereunder to other classes.

103—PUMPS, subclasses 85, Regulators, and the subclasses thereunder, for pump regulators for controlling the operation of pumps for feeding water to boilers or fuel to burners.

128—STOVES AND FURNACES, subclass 351, Water heaters, Liquid or gaseous fuel, Automatic; **158, LIQUID AND GASEOUS FUEL BURNERS**, subclass 36, Burners, Liquid fuel, Fuel feeding, and **236, DAMPERS, AUTOMATIC**, for control of the fuel feed.

128—STOVES AND FURNACES, subclass 351, Water heaters, Liquid or gaseous fuel, Automatic, for controlling devices for fuel and water when the drawoff faucet is operated.

449. **REGULATION, FUEL AND WATER, AUTOMATIC CONTROL, SOLID FUEL.** Devices for automatically controlling the combustion of solid fuel and the regulation of the water feed to boilers, depending upon the conditions within the boiler.

Note.—This is accomplished either by steam pressure or the temperature of the water or steam.

Search Class—

122—LIQUID HEATERS AND VAPORIZERS, subclass 448, Regulation, Fuel and water, Automatic control, Fluid fuel.

450. **REGULATION, SUSPENDED BOILER.** Boilers that are movably supported to control either the combustion of the fuel or water feed or both.

CLASS 122—Continued.

Search Class—

161—TIME CONTROLLING MECHANISM, subclass 16, Timing mechanism, Culinary, for similar supports.

451. **FEEDERS.** Miscellaneous devices for introducing water to boilers and controlling the introduction not otherwise provided for.

Note.—Those devices that are of general application for feeding water to tanks, either open or closed, whether a boiler be disclosed or claimed in a general way, are not classified in class 122 at all, but are placed in classes that will be noted below.

Search Classes—

122—LIQUID AND GASEOUS FUEL BURNERS, subclasses 1, Plants, and the subclasses thereunder, for boiler plants having a boiler feeder in combination; 11, Rotary, where the movement of the boiler is combined with the feeding of water; 40, Flasher, and 41, Flasher, Fluid fuel, for boilers of the flasher type having special means for introducing water into the boiler combined therewith; 365, Water tube, Drums and couplings; 428, Feed heaters, Internal conduit, and 444, Feed heaters, Water tube boiler, for devices disclosing feed introducing apparatus for water tube boilers; 366, Wick, for absorbent wicks for feeding water from one portion of the boiler to another; 396, Cleaning, Systems, for combined cleaning, heating, and feeding devices; 398, Cleaning, Trapped circuit, Feeding water, and 403, Cleaning, Trapped circuit, Surface exit, Feed heater, for combined purifiers, circulators, heaters, and feed introduction; 406, Circulation, for feed introduction combined with circulation; 414, Feed heaters, Boiler circuit, Feed injected, for injecting water into a circuit taking water from the boiler; 415, Feed heaters, Circulation, Surface exit, Mechanical pump, Feed injected, for boilers having a circuit communicating with the boiler provided with a pump for withdrawing water from the water level in the boiler, introducing feed water, and mixing it with the boiler water in the circuit and maintaining the water level; 417, Feed heaters, Drip plate in boiler; 435, Feed heaters, Pan in steam space; 436, Feed heaters, Pan in steam space, Spray, and 438, Feed heaters, Spray to steam space, for devices for introducing water into the steam space; 431, Feed heaters, Internal conduit, Filter in boiler, and 433, Feed heaters, Internal conduit, Trap outside boiler, for feed water conduits provided with traps and filters; 445, Regulation, Depending on load, where the feed water is controlled by devices depending upon the load on the motor; 446, Regulation, Fuel and water, Fluid fuel, for combinations of fuel and water feeders; 447, Regulation, Fuel and water, Fluid fuel, Cut-off, for feeders with automatic cut-off for the fluid fuel upon the occurrence of an abnormal water level; 450, Regulation, Suspended boiler, where the feed is governed by the movement of the boiler itself. (See also in this connection class 161, TIME CONTROLLING MECHANISM, subclass 16, Timing mechanism, Culinary; 446 to 449 under Regulation, Fuel and water, Automatic control, for automatic control of both fuel and water to the boiler; 452, Feeders, Boiler pressure, for art in this class where the feed is controlled by the pressure inside the boiler; 495, Crown sheet protecting, when water is fed upon the crown sheet.

103—PUMPS, subclass 85, Regulators, for controlling devices for feed water pumps depending upon the water level or pressure of water or steam in the boiler.

128—STOVES AND FURNACES, subclass 351, Water heaters, Liquid or gaseous fuel, Automatic, for automatically controlled valves for the type of water heater known in the art as "instantaneous water heaters."

137—WATER DISTRIBUTION, subclasses 68, Tanks, Automatic, and 104, Float valves, for float valves, whether used in a boiler or any other tank; 101, Feeders, for valves and water level controlling devices of general application and for devices for introducing water into a closed tank, chamber, or boiler, commonly known as "gravity" feeders of a type that has no special provision for condensing the steam (so as to make it a vacuum pump and feeder combined, such devices being classified in class 160, STEAM AND VACUUM PUMPS, subclass 3, Feeders and Traps); 102, Indicators, for float valves; and 103, Traps, for float valves for steam traps.

160—STEAM AND VACUUM PUMPS, subclasses 2, Steam loop, for devices technically known in the art as "steam loop" feeders, which raise water by alternating slugs of water and steam in a pipe and delivering it to an elevated tank against the hydraulic head or returning the water to the boiler against the boiler pressure; 3, Feeders and traps, and in class 237, HEAT DISTRIBUTING SYSTEMS, subclass 9, Steam, for apparatus acting as a steam vacuum pump for raising water and feeding it to a closed chamber or boiler having a different pressure by gravity action or for creating a vacuum for withdrawing air and water of condensation from a heating system. (For similar arrangement without special means for producing a vacuum see class 137, WATER DISTRIBUTION, subclass 101, Feeders.)

162—INJECTORS AND EJECTORS, subclasses 2, Injector, Fluid level controlled, for injectors for boilers that are controlled by the water level in the boiler; 3, Ejector, Fluid level controlled, for water level controlled ejectors for removing water from a tank, well, or steam trap.

175—ELECTRICITY, GENERAL APPLICATIONS, subclass 309, Switches, Float-operated, for electrical switches for controlling feed valves of boilers operated by a float.

236—DAMPERS, AUTOMATIC, subclasses 9, Traps, Thermostatic, and the subclasses thereunder, for thermostatically operated steam traps; 12, Expansion, Liquid level, and the subclasses thereunder, for valves thermostatically operated for controlling the level of water in a boiler; 16, Fusible, for valves operated by a fusible member at a certain temperature, for whatever purpose used in a boiler.

CLASS 122—Continued.

- 237—HEAT DISTRIBUTING SYSTEMS, subclass 24, Traps, and the subclasses thereunder, for combinations of thermostatic valves and float valves or pressure operated valves in steam traps.
452. FEEDERS, BOILER-PRESSURE. Devices for feeding water to a boiler and controlling the supply by boiler pressure. This subclass also contains patents having claims to boiler structure combined with the feeding mechanism.
- Search Classes—**
 122—LIQUID HEATERS AND VAPORIZERS, subclasses 445, Regulation, Depending on load; 448, Regulation, Fuel and water, Automatic control, Fluid fuel, and 449, Regulation, Fuel and water, Automatic control, Solid fuel, for the combination of the feed water and the fuel controlling devices depending on boiler pressure.
 103—PUMPS, subclass 85, Regulators, and the subclasses thereunder, for feeders for boilers controlled by boiler pressure claiming a pumping system where it is immaterial whether the tank to which the water is pumped be a boiler, tank, or any other receptacle.
 158—LIQUID AND GASEOUS FUEL BURNERS, subclass 36, Burners, Liquid fuel, Fuel feeding, and 230, AIR AND GAS PUMPS, under the special type of control, for the control of the fuel by boiler pressure.
453. FEEDERS, EXHAUST-STEAM. Devices for returning the exhaust steam to the boiler.
454. FEEDERS, EXHAUST-STEAM, WATER-INJECTED. Devices for mixing exhaust steam with water and returning it to the boiler.
- Search Classes—**
 122—LIQUID HEATERS AND VAPORIZERS, subclass 442, Feed heaters, Steam, Injected, for feed water heaters heated by injecting steam.
 62—REFRIGERATION, subclass 31, Heat transferers and conservers, Injected, and 210, WATER PURIFICATION, subclasses 1, Miscellaneous, and 21, Steam heater and filter, for water heaters heated by injecting steam of general application.
 162—INJECTORS AND EJECTORS, subclass 1, Miscellaneous, for injectors.
455. FEEDERS, EXHAUST-STEAM, WATER-INJECTED, FROM BOILER. Devices for mixing exhaust steam with water taken from the boiler and returning it to the boiler.
- Search Class—**
 122—LIQUID HEATERS AND VAPORIZERS, subclass 36, Auxiliary steam heater.
456. FEEDERS, GRAVITY, AUTOMATIC. Boiler feeders consisting of one or more closed tanks or receptacles having automatically controlled inlet and outlet valves for admitting water to the tank and discharging it therefrom, and also having means for equalizing the pressure between the tank and the boiler, whereby the water will fall by gravity into the boiler, the tank being located above the boiler.
- Search Classes—**
 122—LIQUID HEATERS AND VAPORIZERS, subclasses 451, Feeders, and the subclasses indicated in the search notes thereto; 457, Feeders, Gravity, Automatic, Heater.
 137—WATER DISTRIBUTION, subclass 101, Feeders, and 160, STEAM AND VACUUM PUMPS, subclass 3, Feeders and traps.
 230—AIR AND GAS PUMPS, subclass 18, Fluid piston, Tank and float, for valve structure and analogous arrangement.
457. FEEDERS, GRAVITY, AUTOMATIC, HEATER. Gravity automatic boiler feeders, with means for heating the feed water.
- Search Classes—**
 122—LIQUID HEATERS AND VAPORIZERS, subclasses 456, Feeders, Gravity, Automatic, for automatic gravity feeders without the heater; 458, Feeders, Gravity, Heater, for hand operated gravity feeders with a heater.
 137—WATER DISTRIBUTION, subclass 101, Feeders, and 230, AIR AND GAS PUMPS, subclass 18, Fluid piston, Tank and float, for structure of valves and floats having the same operation.
 160—STEAM AND VACUUM PUMPS, subclass 3, Feeders and traps, for closely allied art.
458. FEEDERS, GRAVITY, HEATER. Gravity feeders having means for heating the feed water, but not of the automatic type.
- Search Class—**
 122—LIQUID HEATERS AND VAPORIZERS, subclass 457, Feeders, Gravity, Automatic, Heater, for gravity feeders of the automatic type with a feed water heater.
459. STEAM TREATMENT. Miscellaneous apparatus and methods for treating steam or vapor, either by superheating or cooling it, or by expanding or compressing it, or by any combination of operations.
- Note.**—If a superheater is of general application for heat transference, it is not classified in the boiler art at all, but in class 62, REFRIGERATION, subclass 32, Heat transferers and conservers, One fluid.
- Search Classes—**
 122—LIQUID HEATERS AND VAPORIZERS, subclass 487, Steam treatment, Superheater, Water injected, for superheaters having means for injecting water into the steam.
 60—MISCELLANEOUS HEAT ENGINE PLANTS, for superheating devices for steam when the products of combustion are mixed with the steam or air and steam are superheated commingled.
 121—STEAM ENGINES, for devices for superheating the steam in the engine cylinder and combinations of engines with superheaters when the structure of the engine is involved.

CLASS 122—Continued.

- 219—ELECTRIC HEATING AND RHEOSTATS, for electric heating devices for superheating steam.
460. STEAM TREATMENT, BOILERS WITH SUPERHEATERS. General combinations of boilers of a miscellaneous structure with steam superheaters, not defined in other subclasses. Superheaters of use only as a steam superheater are classified here.
- Search Classes—**
 122—LIQUID HEATERS AND VAPORIZERS, subclasses 477, Steam treatment, Water tube boiler, Superheater and feed heater, for combinations of water tube boilers with steam superheaters and feed water heaters; 485, Steam treatment, Superheater, Separate furnace, for superheaters with a separate furnace.
 62—REFRIGERATION, subclass 32, Heat transferers and conservers, One fluid, for structure of general application for heat transference that may or may not be employed as a superheater, although the title of the invention may be "steam superheater."
461. STEAM TREATMENT, FIRE-TUBE BOILER, HORIZONTAL, SUPERHEATER. Steam superheaters in combination with horizontal fire tube boilers or flue boilers of a miscellaneous character.
- Search Class—**
 122—LIQUID HEATERS AND VAPORIZERS, subclasses 469, Steam treatment, Horizontal boiler, Superheater, Rear of firebox, and 481, Steam treatment, Superheater, Firebox.
462. STEAM TREATMENT, FIRE-TUBE BOILER, HORIZONTAL, SUPERHEATER, IN FIRE TUBE, FROM SMOKEBOX. The structure and arrangement of a steam tube superheater having steam tubes extending from the smokebox of a horizontal fire tube boiler into the fire tubes.
463. STEAM TREATMENT, FIRE-TUBE BOILER, HORIZONTAL, SUPERHEATER, INTERIOR STEAM SPACE, INTERNAL FIRE-TUBE. Horizontal fire tube boilers having a steam space within the boiler separate from the main steam space, in which are fire tubes for superheating the steam.
- Search Class—**
 122—LIQUID HEATERS AND VAPORIZERS, subclass 482, Steam treatment, Superheater, Fire tube in steam space.
464. STEAM TREATMENT, FIRE-TUBE BOILER, HORIZONTAL, SUPERHEATER, SMOKEBOX, FIRE-TUBE. The structure and arrangement of a superheater for steam having fire tubes passing through the steam chamber of the superheater, located at the smokebox end of a horizontal fire tube boiler.
465. STEAM TREATMENT, FIRE-TUBE BOILER, HORIZONTAL, SUPERHEATER, SMOKEBOX, STEAM-TUBE. The structure and arrangement of a steam tube superheater at the smokebox end of a horizontal fire tube boiler and generally located in the smokebox.
466. STEAM TREATMENT, FIRE-TUBE BOILER, SUPERHEATER AND FEED HEATER. Fire tube boilers or large flue boilers having both a steam superheater and a feed water heater combined therewith.
467. STEAM TREATMENT, FIRE-TUBE BOILER, VERTICAL, SUPERHEATER. The structure and general arrangement of superheaters for vertical fire tube boilers, except those located in the firebox.
- Search Class—**
 122—LIQUID HEATERS AND VAPORIZERS, subclasses 468, Steam treatment, Flue Boiler, Vertical, Internal water tube, Superheater; 481, Steam treatment, Superheater, Firebox.
468. STEAM TREATMENT, FLUE BOILER, VERTICAL, INTERNAL WATER-TUBE, SUPERHEATER. Vertical flue boilers having water tubes within the flue, in combination with a steam superheater.
469. STEAM TREATMENT, HORIZONTAL BOILER, SUPERHEATER, REAR OF FIREBOX. Superheaters located at the rear of the firebox or back of the bridge wall of miscellaneous boilers extending horizontally. The boiler is generally of the horizontal cylindrical type.
- Search Class—**
 122—LIQUID HEATERS AND VAPORIZERS, subclasses 464, Steam treatment, Fire tube boiler, Horizontal, Superheater, Smokebox, Fire tube, for general combination of superheater with horizontal fire tube boilers; 481, Steam treatment, Superheater, Firebox.
470. STEAM TREATMENT, HORIZONTAL BOILER, SUPERHEATER, WASTE HEAT FLUE. The structure and arrangement of a superheater in the waste heat flue of a horizontally located boiler.
- Search Classes—**
 122—LIQUID HEATERS AND VAPORIZERS, the subclasses under Feed Heaters generally, and especially subclass 421, Feed heaters, Furnace gases, Offtake flue.
 62—REFRIGERATION, subclass 32, Heat transferers and conservers, One fluid, for structures of general application for heat transference, although a steam boiler may be disclosed in the patent.

CLASS 122—Continued.

471. STEAM TREATMENT, WATER-TUBE BOILER, DECLINED OVER BRIDGE-WALL, FRONT AND REAR HEADER, DECLINED DRUM, SUPERHEATER. The structure and general arrangement of a steam superheater within the combustion space of a water tube boiler having banks of water tubes rearwardly declined over the bridge wall and in communication with front and rear headers, which are in communication with a declined drum posited above the water tubes.
472. STEAM TREATMENT, WATER-TUBE BOILER, DECLINED OVER BRIDGE-WALL, FRONT AND REAR HEADER, LONGITUDINAL DRUM, SUPERHEATER. The structure and general arrangement of a superheater in the combustion space of a water tube boiler having banks of water tubes rearwardly declined over the bridge wall and communicating with headers at each end, which headers communicate with a longitudinal drum posited above the water tubes.
473. STEAM TREATMENT, WATER-TUBE BOILER, LONGITUDINAL DRUM, SUPERHEATER. Superheaters for water tube boilers having a longitudinal drum not otherwise provided for.
- Search Class—**
122—LIQUID HEATERS AND VAPORIZERS, subclass 472, Steam treatment, Water tube boiler, Declined over bridge wall, Front and rear header, Longitudinal drum, Superheater.
474. STEAM TREATMENT, WATER-TUBE BOILER, OVER BRIDGE-WALL, SUPERHEATER. Miscellaneous superheaters for water tube boilers having banks of tubes over the bridge wall.
475. STEAM TREATMENT, WATER-TUBE BOILER, STAND-PIPE, SPUR-TUBE, SUPERHEATER. The structure and general arrangement of a steam superheater in the combustion space of a water tube boiler having a stand pipe provided with spur water tubes.
476. STEAM TREATMENT, WATER-TUBE BOILER, SUPERHEATER. Miscellaneous water tube boilers having superheaters for steam combined with the boiler in the same heating chamber.
- Search Class—**
122—LIQUID HEATERS AND VAPORIZERS, subclasses 474, Steam treatment, Water tube boiler, Over bridge wall, Superheater, for superheaters for water tube boilers of a miscellaneous type, with water tubes over the bridge wall; 477, Steam treatment, Water tube boiler, Superheater and feed heater.
477. STEAM TREATMENT, WATER-TUBE BOILER, SUPERHEATER AND FEED HEATER. Water tube boilers provided with both a superheater for steam and a feed water heater.
478. STEAM TREATMENT, WATER-TUBE BOILER, TRANSVERSE DRUM, SUPERHEATER. Superheaters for water tube boilers having one or more transverse drums.
479. STEAM TREATMENT, SUPERHEATER, AUTOMATIC HEAT REGULATION. Steam superheaters having means for automatically regulating the temperature of the superheated steam.
- Search Classes—**
122—LIQUID HEATERS AND VAPORIZERS, subclasses 445, Regulation, Depending on load; the subclasses under Regulation, Fuel and water, Automatic control, and 452, Feeders, Boiler pressure, for closely allied art and special features of controlling devices.
126—STOVES AND FURNACES, subclass 351, Water heaters, Liquid or gaseous fuel, Automatic, for similar controllers.
236—DAMPERS, AUTOMATIC, for structure of the controlling device.
480. STEAM TREATMENT, SUPERHEATER, DAMPER CONTROLLED. Superheaters having a damper for varying the amount of heat to which the superheater is subjected and their arrangement with the boiler.
- Search Class—**
122—LIQUID HEATERS AND VAPORIZERS, subclass 479, Steam treatment, Superheater, Automatic heat regulation.
481. STEAM TREATMENT, SUPERHEATER, FIREBOX. Superheaters located in the firebox of any type of boiler, or the superheater may be located around the firebox.
482. STEAM TREATMENT, SUPERHEATER, FIRE-TUBE IN STEAM-SPACE. Boilers having fire tubes in the steam space of the boiler for superheating the steam.
- Search Class—**
122—LIQUID HEATERS AND VAPORIZERS, subclasses 463, Steam treatment, Fire tube boiler, Horizontal, Superheater, Interior steam space, Internal fire tube, for fire tubes heating a separate steam chamber in the boiler; 486, Steam treatment, Superheater, Steam dome, for superheated steam domes.
483. STEAM TREATMENT, SUPERHEATER, INDIRECTLY HEATED. Devices for superheating steam indirectly by heating a fluid or fusible solid and transferring the heat of the fluid or melted mass to the steam.
- Note.—Compare the subclasses under Indirectly heated, Separate fluid.
- Search Class—**
122—LIQUID HEATERS AND VAPORIZERS, subclass 479, Steam treatment, Superheater, Automatic heat regulation, for this type of superheater having an automatic temperature regulator.

CLASS 122—Continued.

484. STEAM TREATMENT, SUPERHEATER, SEPARATE CHARGES. Superheaters provided with means for heating the steam in separate charges, each charge or portion being cut off and isolated from the main steam line while being superheated.
- Search Classes—**
60—MISCELLANEOUS HEAT ENGINE PLANTS, if air or products of combustion are mixed with the steam.
121—STEAM ENGINES, if the superheater is combined with the engine structure.
485. STEAM TREATMENT, SUPERHEATER, SEPARATE FURNACE. Steam superheaters having a separate furnace for heating them.
486. STEAM TREATMENT, SUPERHEATER, STEAM-DOME. Steam domes provided with means for drying or superheating the steam, excluding mere steam separators.
- Search Class—**
122—LIQUID HEATERS AND VAPORIZERS, subclasses 492, Separators, Steam dome, for steam domes with separators; 508, Steam domes, for steam domes without separators.
487. STEAM TREATMENT, SUPERHEATER, WATER INJECTED. Means for injecting water into superheated steam or to structure of superheaters with water injection mechanism.
488. SEPARATORS, BOILER CIRCULATION. Devices located within the boiler for separating the steam from the water as it circulates in the boiler.
- Search Class—**
122—LIQUID HEATERS AND VAPORIZERS, subclass 408, Circulation, Internal conduit, and the subclasses thereunder, for circulating conduits with incidental steam separators.
489. SEPARATORS, BOILER RETURN. Combinations of separators located in the steam main leading from the boiler with means for automatically returning the water to the boiler.
- Search Classes—**
83—MILLS, subclass 90, Steam separators, for structure of the separator.
160—STEAM AND VACUUM PUMPS, subclass 2, Steam loop, for disclosures of separators in the steam main with "steam loop" apparatus for returning the water to the boiler.
490. SEPARATORS, FOR TILTING BOILERS. Mechanism for preventing water being carried out of the boiler into the steam main when the boiler is tilted or inclined from a normal horizontal position, as, for instance, when a ship is pitching or rolling or when a traction engine is ascending or descending a grade or when a locomotive on a railroad is in like position.
- Search Class—**
122—LIQUID HEATERS AND VAPORIZERS, subclass 495, Crown sheet protecting, and as indicated in the notes thereto.
491. SEPARATORS, INTERIOR OF BOILER. Steam separators located either within the steam space of a boiler or in the steam space, in combination with a separator in the steam dome or steam main or at the outlet of the boiler, so that the water will fall back into the boiler when steam is being discharged.
- Note.—This subclass includes separators of the nature defined, although they may be used in a sugar evaporator.
- Search Classes—**
122—LIQUID HEATERS AND VAPORIZERS, subclasses 488, Separators, Boiler circulation, and the subclasses referred to in the notes thereunder, for means for separating steam from the water circulation of the boiler; 489, Separators, Boiler return, for separators in the steam main with means for returning the water to the boiler; 492, Separators, Steam dome, for steam domes with separators.
83—MILLS, subclass 90, Steam separators, for separators located in a steam main.
103—PUMPS, subclass 106, Trap type; 137, WATER DISTRIBUTION, subclass 103, Traps; 160, STEAM AND VACUUM PUMPS, subclass 3, Feeders and traps; 162, INJECTORS AND EJECTORS, subclass 3, Ejector, Fluid level controlled; 236, DAMPERS, AUTOMATIC, subclasses 9, Traps, and the subclasses thereunder; 12, Expansion, Liquid level; 13, Expansion, Liquid level, Separate conduit, and 14, Expansion, Liquid level, Separate conduit, Pressure operated valve, and 237, HEAT DISTRIBUTING SYSTEMS, subclass 24, Traps, and the subclasses thereunder, for steam traps.
492. SEPARATORS, STEAM-DOME. Steam separators located in the steam dome of the boiler or to the structure of the steam dome having steam separating apparatus.
- Search Classes—**
122—LIQUID HEATERS AND VAPORIZERS, subclass 486, Steam treatment, Superheater, Steam dome, for steam domes with superheaters; 508, Steam domes, for steam domes without steam separators.
136—STEAM ENGINE VALVES, subclass 11, Throttle, for throttle valves in steam domes with incidental steam separators.
493. BRACES AND STAYS. Miscellaneous braces and stays and their general arrangement with the boiler walls not included in the definitions of other subclasses.
- Search Classes—**
122—LIQUID HEATERS AND VAPORIZERS, subclasses 83, Fire tube, Horizontal, Transverse diaphragm, for supports for fire tubes for horizontal fire tube boilers; 360, Water tube, Headers, Closures and couplings, and the subclasses thereunder, for braces and stays for headers and header structure; 496, Crown sheets and stays, for the general arrangement of stays and the structure of crown sheets.

CLASS 122—Continued.

- 85—DRIVEN, HEADED, AND SCREW THREADED FASTENINGS**, subclass 1.5 Bolts, Stays, for boiler stay bolts.
- 220—METALLIC SHIPPING AND STORING VESSELS**, subclass 140, Tanks, Braces, for boiler braces of general application for any closed tank.
- 494. CASINGS.** Inclosures surrounding a boiler of a miscellaneous nature not specially provided for in other subclasses in this or any other main class.
- Search Classes—**
- 62—REFRIGERATION**, subclass 23, Heat insulated receptacles; **72, MASONRY AND CONCRETE STRUCTURES**, subclass 41, Walls, Block, Hollow; **106, PLASTIC COMPOSITIONS**, subclass 18, Heat insulating; **137, WATER DISTRIBUTION**, subclasses 72, Mains and pipes, Thawing, and 75, Mains and pipes, Pipes, for other heat insulating art.
- 110—FURNACES**, subclasses 1, Furnace structure, and 4, Furnace structure, Horizontal cylindrical boiler, for brickwork forming part of the furnace which covers the boiler.
- 154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES**, subclasses 44, Heat insulating coverings, and 45, Heat insulating coverings, Air-spaced, for what are known as "boiler coverings" for preventing the radiation of heat.
- 495. CROWN-SHEET PROTECTING.** Boilers having means to prevent the crown sheet over the firebox from being uncovered by water when the boiler is tilted from the normal horizontal position.
- Search Classes—**
- 122—LIQUID HEATERS AND VAPORIZERS**, subclass 490, Separators, For tilting boilers, for allied art.
- 21—CARRIAGES AND WAGONS**, subclass 114, Traction engines, for devices to keep the boiler of a traction engine level when going up or down grade.
- 496. CROWN SHEETS AND STAYS.** The structure of crown sheets and braces and stays therefor.
- Search Classes—**
- 122—LIQUID HEATERS AND VAPORIZERS**, subclasses 58, Fire tube, Horizontal, Drop water firebox; 493, Braces and stays, for miscellaneous braces and stays.
- 85—DRIVEN, HEADED, AND SCREW THREADED FASTENINGS**, subclass 1.5, Bolts, Stay, for stay bolts.
- 220—METALLIC SHIPPING AND STORING VESSELS**, subclass 140, Tanks, Braces, for braces and stays for boilers and closed tanks of general application.
- 497. FRONTS.** Water-cooled fronts for boilers.
- 498. FRONTS, DOORS.** Water-cooled furnace doors. There may or may not be a circulatory communication with the boiler. The door may be employed to heat water for any purpose or to generate steam.
- Search Classes—**
- 75—METALLURGY**, subclass 132, Puddling hearths, Doors and bits, and **202, CHARCOAL AND COKE**, subclass 6, Coke, Ovens, Doors.
- 110—FURNACES**, subclass 180, Doors and casings, Cooling, for air-cooled furnace doors.
- 499. FRONTS, MOUTHS.** The structure of the fuel feed opening of a firebox having water heating chambers or conduits. The feed water may be heated in this structure.
- Search Class—**
- 122—LIQUID HEATERS AND VAPORIZERS**, subclasses 93, Fire tube, Horizontal, Water firebox, Offset; 94, Fire tube, Horizontal, Water firebox, Offset, Water tube type; 189, Horizontal cylinder, Offset subjacent firebox, Water roof; 190, Horizontal cylinder, Offset subjacent firebox, Water tube; 193, Horizontal cylinder, Water firebox, and 194, Horizontal cylinder, Water firebox, Water tube type.
- 500. FRONTS, MOUTHS, WATER-FIREBOX.** The construction of the fuel feed passage in a water firebox.
- 501. FLUID-DISPLACER.** Boilers whose steam or water space or some part thereof contains fluid displacing elements.
- Search Class—**
- 122—LIQUID HEATERS AND VAPORIZERS**, subclasses 40, Flasher; 242, Water tube, Capillary; 243, Water tube, Capillary, Fluid fuel; 406, Circulation, and 509, Submerged steam chamber.
- 502. FLUID-DISPLACER, FLUID FUEL.** Boilers whose steam or water space or some part thereof contains fluid displacing elements and is heated by fluid fuel.
- Search Class—**
- 122—LIQUID HEATERS AND VAPORIZERS**, subclasses 243, Water tube, Capillary, Fluid fuel, and 406, Circulation.
- 503. FUEL-BAFFLES.** The structure and arrangement of a water-cooled baffle, which is generally located in the firebox for receiving the impact of the burning fuel, either fluid or comminuted solid fuel.
- Note.**—Compare class 122, LIQUID HEATERS AND VAPORIZERS, subclass 10, For fluid fuel burner.
- 504. SAFETY DEVICES.** Devices not otherwise provided for to prevent explosions or injury to boilers.
- Search Classes—**
- 122—LIQUID HEATERS AND VAPORIZERS**, subclasses 125, Fire tube, Vertical, Top water chamber, and 164, Flue, Vertical, Insulated outlet flue; 364, Water tube, Headers, Closures and couplings, Tube closures; 437, Feed, heaters, Safety valve; 447, Regulation, Fuel and water, Fluid fuel, Cut-off; 490, Separators, For tilting boilers; 494, Casings; 495, Crown sheet protecting, for different types of safety devices in this class.

CLASS 122—Continued.

- 122—LIQUID HEATERS AND VAPORIZERS**, subclass 450, Regulation, Suspended boiler; **151, TIME CONTROLLING MECHANISM**, subclass 16, Timing mechanism, Culinary, and **236, DAMPERS, AUTOMATIC.**
- 122—LIQUID HEATERS AND VAPORIZERS**, subclass 490, Separators, for tilting boilers; **103, PUMPS; 175, ELECTRICITY, GENERAL APPLICATIONS**, subclass 309, Switches, Float operated, and **177, ELECTRIC SIGNALING**, subclass 317, Alarms, Liquid level, for special safety devices.
- 62—REFRIGERATION**, subclass 24, Condensers, for safety devices for condensers.
- 73—MEASURING INSTRUMENTS**, subclass 54, Gages, Water.
- 85—DRIVEN, HEADED, AND SCREW THREADED FASTENINGS**, subclass 1.5, Bolts, Stay, for stay bolts having indicators for breakage of bolt; also in this class (122), subclasses 493, Braces and stays, and 510, Supports.
- 126—STOVES AND FURNACES**, subclass 35, Stoves, Cooking, Water backs, Safety devices; **136, STEAM ENGINE VALVES**, subclasses 9, Safety, and 11, Throttle; **137, WATER DISTRIBUTION**, subclass 53, Safety valves, and **237, HEAT DISTRIBUTING SYSTEMS**, subclass 15, Water, for safety valves.
- 136—STEAM ENGINE VALVES**, subclass 11, Throttle, for valves of general application that close a steam conduit to prevent steam from escaping and doing damage when a steam main or pipe bursts.
- 137—WATER DISTRIBUTION**, subclasses 4, Cocks and faucets, Reciprocating valves, for valves provided with diaphragms that break under a given pressure; **102, Indicators; 103, Traps**, for steam traps that are drained when the pressure is off to prevent freezing.
- 220—METALLIC SHIPPING AND STORING VESSELS**, subclass 121, Tank attachments, Safety, for diaphragms for boilers and tanks that break under a given pressure; **124, Tank closures**, for boiler manholes and closures with safety attachments.
- 236—DAMPERS, AUTOMATIC**, subclasses 15, Expansion, Liquid level, Trip valve, and 16, Fusible, for valves closed or opened for safety purposes and for fusible plugs or parts in the boiler walls.
- 237—HEAT DISTRIBUTING SYSTEMS**, subclass 25, Traps, Heated, for steam traps that are heated to prevent freezing.
- 505. SAFETY DEVICES, FIRE-EXTINGUISHERS, FLOAT-CONTROLLED.** Float controlled devices for admitting steam or water to the firebox or for otherwise extinguishing or dampening the fire.
- Search Class—**
- 236—DAMPERS, AUTOMATIC**, subclasses 16, Fusible, for fusible members and plugs for admitting water or steam to the boiler; 15, Expansion, Liquid level, Trip valve, and **169, FIRE EXTINGUISHERS**, generally.
- 506. SAFETY DEVICES, FIRE-EXTINGUISHERS, PRESSURE-CONTROLLED.** Devices for extinguishing or dampening the fire of the boiler when a certain pressure inside the boiler is attained. This includes combined safety valves and fire extinguishers.
- 507. SAFETY DEVICES, SELF-CLOSING VALVE.** Boilers with valves that close automatically when some part of the boiler bursts in order to prevent steam or water from escaping.
- Search Classes—**
- 122—LIQUID HEATERS AND VAPORIZERS**, subclass 364, Water tube, Headers, Closures and couplings, Tube closures, for hand operated valves for closing tubes and headers.
- 62—REFRIGERATION**, subclass 24, Condensers, and the subclasses thereunder, for valves automatically operated for similar purposes.
- 83—MILLS**, subclass 90, Steam separators, for steam separators provided with valves for preventing the water of condensation from entering the steam main leading to the engine.
- 136—STEAM ENGINE VALVES**, subclass 11, Throttle, for valves of general application to a steam conduit for preventing escape of steam or water.
- 508. STEAM-DOMES.** The structure of the steam receiving and storing chambers for boilers with which the steam main communicates which do not come within the definition of other subclasses.
- Search Classes—**
- 122—LIQUID HEATERS AND VAPORIZERS**, subclass 88, Fire tube, Horizontal, Upper drum; 365, Water tube, Drums and couplings, for steam and water drums for water tube boilers; 463, Steam treatment, Fire tube boilers, Horizontal, Superheater, Interior steam space, Internal fire tube, and 509, Submerged steam chamber, for steam collecting chambers located within the body of the boiler; 486, Steam treatment, Superheater, Steam dome, for steam domes or chambers having means for superheating the steam. See also subclass 463, Steam treatment, Fire tube boiler, Horizontal, Superheater, Interior steam space, Internal fire tube.
- 136—STEAM ENGINE VALVES**, subclass 11, Throttle, for steam domes with throttle valves.
- 509. SUBMERGED STEAM-CHAMBER.** Boilers provided with a steam chamber or receiver inside the boiler below the water line.
- Search Class—**
- 122—LIQUID HEATERS AND VAPORIZERS**, subclasses 36, Auxiliary steam heater, and 463, Steam treatment, Fire tube boiler, Horizontal, Superheater, Interior steam space, Internal fire tube, for special combinations.
- 510. SUPPORTS.** Mechanism and structure for supporting boilers of various types when the structure of the boiler or the general arrangement is claimed in combination with the support.

CLASS 122—Continued.**Search Classes—**

- 122—LIQUID HEATERS AND VAPORIZERS**, subclasses 11, Rotary, and 12, Rotatably supported, for rotatably supported boilers; 450, Regulation, Suspended boiler, for normally supported boilers for regulating the feed water or heat generation.
- 110—FURNACES**, for structure of furnace walls.
- 220—METALLIC SHIPPING AND STORING VESSELS**, subclass 139, Tanks, Supports and brackets, for boiler supports and settings and brackets of general application adapted to support any closed or open tank.
- 236—DAMPERS, AUTOMATIC.**

- 511. TUBES AND CONNECTIONS.** The structure of tubes and flues for boilers not of general application and their connection with the boiler and couplings for tubes or flues, not specially provided for in other subclasses.

Search Classes—

- 122—LIQUID HEATERS AND VAPORIZERS**, subclasses 360, Water tube, Headers, Closures and couplings, and the subclasses thereunder, and 365, Water tube, Drums and couplings, for tube couplings for headers and drums and the structure of the headers and drums.

CLASS 122—Continued.

- 62—REFRIGERATION**, subclasses 24, Condensers, and the subclasses thereunder; 28, Cooling radiators, Motor vehicle, and 29, Heat transferrers and conservers, and the subclasses thereunder.

- 110—FURNACES**, subclass 97, Furnace structure, Baffles and heat retainers, for protecting devices for the ends of boiler tubes.

- 121—STEAM ENGINES**, subclass 110, Packing, Steam-joint.

- 137—WATER DISTRIBUTION**, subclass 98, Pipe couplings, Pipe and plate, for couplings for tubes of boilers and condensers or feed water heaters to the tube sheet.

- 137—WATER DISTRIBUTION**, subclass 100, Mains and pipes, Tubes, for structure of tube or flue.

- 512. TUBE SHEETS.** Structure of the tube sheet for boilers not of general application.

Search Class—

- 122—LIQUID HEATERS AND VAPORIZERS**, subclasses 365, Water tube, Drums and couplings, and 511, Tubes and connections.

CLASS 123.—INTERNAL-COMBUSTION ENGINES.

DEFINITIONS.

Class.

This class contains inventions relating to prime movers or engines in which a combustible material is burned within an inclosed space or chamber and the heat energy thus developed converted into work by permitting the resulting products of combustion to act upon and through mechanical powers, the engine in question including suitable mechanism whereby the functions above enumerated are continually and automatically carried out, and such engine being designed to communicate power to some machine or device exterior to itself.

The space or combustion-chamber above referred to is ordinarily the interior of the working cylinder of the engine, the products of combustion acting immediately upon a reciprocating or rotating piston moving within the same chamber in which combustion takes place or in an extension thereof. Some types of internal-combustion engines, however, besides fulfilling the conditions above mentioned, have a valve operated by and in unison therewith located between the combustion-chamber and the elements upon and through which the products of combustion act to thereby control the flow of said products, in which case the chamber within which the combustible material is burned is so formed within the structure of the engine of which it forms a part as to be inseparable therefrom without destroying the identity of the device as a whole.

The working fluid is ordinarily such as results from combustion alone; but in some of the engines in this class a small quantity of water is supplied to the engine, generally by injecting it directly into the interior of the combustion-chamber during or after the combustion of the combustible material; but in all engines using water the amount used is comparatively small, so that the resulting steam is necessarily in a superheated condition.

This class also includes separate parts of engines coming within the above definition and also subordinate elements designed for use with such engines and incapable of use in the manner contemplated with other devices or in other relations.

From the above it will be seen that devices go into this class because of a function performed by a given element or combination of elements rather than because of any particular structure of such elements, and therefore, given structural features forming a machine adapted for use as an internal-combustion engine, may be found in any other classes having machines of like general structure. Thus probably any given structure adapted for use as an internal-combustion engine could generally with slight modification be used as a steam or other heat engine, and often as an air, gas, or water pump, a hydraulic motor, a meter, etc. This would not ordinarily be the case with the subordinate or auxiliary devices included in this class, as from what appears above such subordinate elements as the class contains are adapted for use in the manner contemplated only with or forming a part of an internal-combustion engine.

It therefore follows that a search for a given general mechanical structure adapted for use as an internal-combustion engine will generally need to be continued in the classes above indicated.

Further fields of search for the various subordinate elements designed for and adapted to be used only with internal-combustion engines, and therefore included in this class, are indicated in the definitions hereinafter appearing of those various subclasses.

For devices for elevating water through the agency of burned or exploded gases, see class 160, STEAM AND VACUUM PUMPS, and class 103, PUMPS, subclass 67, Fluid motive power.

For devices for propelling boats through the same agency, see class 115, MARINE PROPULSION, subclass 13, Jet, Explosive.

For devices in which burned or exploded gases are used directly to operate a rock-drill, see class 125, STONE-WORKING, subclass 10, Drills.

Subclasses.

1. MISCELLANEOUS. Internal-combustion engines not coming within the terms of the definition of some one of the following internal-combustion-engine subclasses. This subclass contains patents relating to cycles or modes of operation not hereinafter provided for or in which the cycle or mode of operation is not definitely determined by the structure disclosed and will not ordinarily contain patents relating to definite mechanical structure.

Note.—Given mechanical structures not provided for in structural subclasses, but operating upon a definite and determined cycle of operation provided for in this classification, are classified in miscellaneous functional or cycle subclasses, such as 65, Two-cycle and subclasses thereunder, and 75, Four-cycle and subclasses thereunder, etc.

2. COMBINED DEVICES. Combinations not coming within the terms of the following subclasses of combined devices in which an internal-combustion engine is disclosed and claimed in combination with some other device not in itself classifiable in some appropriate subclass of internal-combustion engines and which combined device itself is not treated as a unitary machine in the general system of Office classification and as such classified in some appropriate class.

Search Classes—

- 171—ELECTRICITY, GENERATION, subclass 314, Systems, Secondary battery.
191—ELECTRICITY, ELECTRIC RAILWAYS, subclass 2, Electric locomotives.

CLASS 123—Continued.

3. COMBINED DEVICES, GENERATING PLANTS. Combinations of an internal-combustion engine together with means for generating and supplying a combustible mixture thereto, the engine and generating apparatus being ordinarily capable of separation, but disclosed and claimed in combination, and the elements collectively forming a complete plant for developing and applying power. In the power plants occurring herein the various elements constituting the generating portion of the plant are of ordinary or commercial form and if presented by themselves would be classified in other classes or subclasses. Patents covering the engine and generating device together are classified in the class of internal-combustion engines, because all the elements of the plant are so correlated as to develop and apply power by means including an internal-combustion engine.

Note.—The devices occurring in this subclass differ from many of the engines in subclasses of oil-engines in that in an oil-engine the source of power is always a liquid hydrocarbon and the elements concerned with the vaporization of the oil and those constituting the engine are so designed with reference to each other as to form a single unitary machine incapable of being separated into its component sets of elements without defeating the operation of the engine as a whole in the manner contemplated.

4. COMBINED DEVICES, INTERNAL-COMBUSTION AND FLUID-PRESSURE. Engines or systems for developing and applying power comprising an internal-combustion engine and a fluid-pressure engine, each designed to operate through mechanical means to drive a given machine and both generally acting to drive a single machine, the engine or system in question not coming within the terms of the definition of one of the two following subclasses. The internal-combustion and fluid-pressure engines may be separate and distinct from each other, or a single working cylinder may be supplied alternately with a fluid under pressure to act therein without chemical change and with a combustible mixture to be burned therein, the engine in the second of the cases herein stated not coming within the terms of the definition of the subclass of Internal-combustion and air. This subclass also includes devices comprising an internal-combustion engine and a convertible pump and fluid-pressure motor, by means of which surplus energy may be stored when the engine is running light and utilized to assist the engine when the work to be done is excessive. The fluid under pressure which drives the fluid-pressure motor undergoes no chemical change therein, and such fluid may be one not adapted for use in an internal-combustion engine, as air, steam, etc., or the fluid-pressure motor may be operated by a compressed fluid having combustible properties, in which case the exhaust-gases therefrom are normally conducted to and burned within the internal-combustion engine.

Note.—This subclass does not include internal-combustion engines in which a combustible mixture under pressure is supplied to a single working cylinder and acts to propel the piston through a portion of its working stroke before ignition of the charge takes place. Such engines are classified in subclass 68, Two-cycle, Pump compression, and in subclass 61, Double-acting, Two-cycle, both in this class.

Note.—This subclass does not include internal-combustion engines in which the exhaust-gases are conducted to and permitted to expand in a second cylinder. For such engines see in this class, subclass 36, Multiple expansion.

5. COMBINED DEVICES, INTERNAL-COMBUSTION AND FLUID - PRESSURE, FLUID TRANSMISSION. Engines or systems for developing and applying power, comprising an internal-combustion engine, a fluid compressing or forcing device operated thereby, a fluid-pressure motor designed to operate the machine or other device to be driven, and a conduit connecting the fluid compressing or forcing device and the fluid-pressure motor, whereby the energy developed by the internal-combustion engine is transmitted to and operates the fluid-pressure motor through the fluid operated upon by the compressing or forcing device. The fluid-pressure motor thus becomes the immediate source of power for operating the machine to be driven, and the internal-combustion engine can in no case act directly upon the said machine to drive it. The fluid after having passed through the fluid-pressure motor may or may not be returned to the fluid compressing or forcing device to be used over again.
- Note.—Patents disclosing only an internal-combustion engine and a compressing or forcing device operated thereby, although capable of and frequently designed to form a part of such a system as is defined herein, are classified in this class, subclass 2, Combined devices.

6. COMBINED DEVICES, INTERNAL-COMBUSTION AND FLUID-PRESSURE, WASTE-HEAT UTILIZING. Engines designed to utilize the heat usually lost through the exhaust gases, the cooling medium, or through radiation in the operation of an internal-combustion engine, comprising means whereby the heat generated by burning a combustible mixture in such an engine and not converted into work thereby is utilized to impart energy to a fluid, which energy is utilized by permitting the said fluid or vapor generated therefrom to act

CLASS 123—Continued.

without chemical change in a suitable fluid-pressure motor, whereby work is done in addition to that done by the internal-combustion engine, and systems for generating power and involving means for utilizing, as above set forth, the heat usually lost in the operation of an internal-combustion engine. The fluid acted upon by the surplus heat may be one not adapted for use in an internal-combustion engine, as water, air under pressure, etc., or it may have combustible properties, in which case after a portion of the energy imparted thereto has been utilized by a fluid-pressure motor, as above set forth, the fluid is normally conducted to the internal-combustion engine and burned therein. The engines ordinarily include two or more working chambers and pistons therefor acting upon a single crank-shaft, in one of which a combustible charge is burned, while the energy imparted to the fluid is utilized in the other. The internal-combustion and fluid-pressure engines may, however, be wholly independent except as to the interchange of heat set forth.

Note.—This subclass does not include devices whereby the combustible charge or one of its constituents is heated by heat ordinarily lost in the operation of an internal-combustion engine, the energy thus imparted to the charge not being utilized as above set forth to do work. For such devices see in this class, subclass 129, Charge-forming devices, Heating, and the subclasses under Oil-engines.

Note.—For devices in which heat ordinarily lost in the operation of an internal-combustion engine is utilized to generate steam to be used, together with air and a hydrocarbon, to form the combustible mixture supplied to and burned within the engine see in this class, subclass 25, Water and hydrocarbon.

Note.—For internal-combustion engines in which the combustible mixture, or both the constituents thereof, is supplied to the working cylinder under pressure after the beginning of the working stroke, together with means whereby the waste heat from the engine is utilized to heat the said mixture or one or both of its constituents prior to the entry thereof into the working cylinder, see in this class, subclasses 61, Double-acting, Two-cycle, and 68, Two-cycle, Pump compression.

Note.—For devices designed to utilize the heat ordinarily lost in the operation of a steam engine in a way similar to that defined in this definition, see in class 122, LIQUID HEATERS AND VAPORIZERS, subclass 24, Fluid fuel, Explosion.

Search Class—

60—MISCELLANEOUS HEAT-ENGINE PLANTS, subclass 24, Separate fluid, Waste heat.

7. **HAMMERS.** Devices designed to deliver a blow or series of blows to a material or object operated upon, such as hammers, rock-drills, stamps, and the like, said device being provided with operating means, including a working cylinder and means for supplying a combustible thereto and burning it therein, and the invention as defined by the claims relating to the internal-combustion-engine features of the mechanism.

8. **ROTARY.** Miscellaneous internal-combustion engines in which the element or piston upon which the gases resulting from the ignition of a combustible mixture supplied thereto act partakes of a continuous rotary motion.

Note.—The engines occurring in this and the following subclasses of rotary internal-combustion engines often include a closed chamber to which air and a hydrocarbon are supplied under pressure to be burned therein and the resulting gases conducted to and permitted to act upon the rotating member of the engine, the structure and operation being thus similar to that of many of the devices occurring in class 60, MISCELLANEOUS HEAT-ENGINE PLANTS, subclass 4, Rotary engine. This is particularly the case as to the engines classified in subclass 9, Rotary, Impact, in this class.

Note.—Where the chamber in which the hydrocarbon is burned to produce a gas under pressure is so intimately associated with the rotating element and inclosing casing of the engine as to be incapable of separation therefrom without destroying the identity of the device as a whole and defeating its operation in the manner contemplated, the device as a whole is considered as an internal-combustion engine and is classified in this or in some one of the following rotary-engine subclasses. Where the pressure-generating chamber is disclosed as removed from the rotating element and inclosing casing of the engine and connected therewith by means of a suitable conduit through which the burned gases flow, so that the pressure-generating chamber could be used with elements other than those with which it is disclosed to form the other air-engines, the device as a whole is classified in class 60, MISCELLANEOUS HEAT-ENGINE PLANTS, subclass 4, Rotary engine.

Note.—Patents in which the invention claimed relates solely to a closed chamber and means for supplying a combustible mixture thereto and for burning such mixture therein, as above pointed out, to produce a fluid under pressure, which fluid, although perhaps most frequently intended for the purpose of operating a suitable fluid-pressure engine, is obviously capable of any use to which such a fluid is applicable, are classified in class 60, MISCELLANEOUS HEAT-ENGINE PLANTS, subclasses 28, Pressure generators; 36, Pressure generators, Air, Combustion products injected; and 37, Pressure generators, Air, Combustion products injected, Explosion.

Search Classes—

121—STEAM-ENGINES, subclass 47, Rotary, and subclasses thereunder, containing engines structurally similar to the one in question.

73—MEASURING INSTRUMENTS, subclass 37, Meters, Rotary.

103—PUMPS, subclasses 43, Rotary single piston, and 44, Rotary double piston.

138—HYDRAULIC MOTORS, subclass 3, Rotary.

9. **ROTARY, IMPACT.** Rotary internal-combustion engines in which the gases resulting from the combustion of a mixture of air and a hydrocarbon are directed against the rotating

CLASS 123—Continued.

element of the engine and impel said element by impact therewith, the engine thus depending for its operation upon the kinetic energy of the burned gases as they flow to the rotating element.

Note.—For devices including a closed chamber and means for supplying air and a hydrocarbon thereto and for burning the resulting combustible mixture therein, thus producing a gas under pressure available for general purposes, see class 60, MISCELLANEOUS HEAT-ENGINE PLANTS, subclasses 28, Pressure generators, 36, Pressure generators, Air, Combustion products injected; and 37, Pressure generators, Air, Combustion products injected, Explosion; and for such a device in combination with a rotating element, the several elements not, however, so closely associated as pointed out in the definition of the preceding subclass as to bring the device as a whole into some rotary internal-combustion-engine subclass, see in same class, subclass 4, Rotary engine.

Search Class—

121—STEAM-ENGINES, subclass 56, Rotary, Impact, and the subclasses thereunder, according to the type of the device in question.

10. **ROTARY, REACTION.** Rotary internal-combustion engines in which the gases resulting from the combustion of a mixture of air and a hydrocarbon are permitted to issue from an opening in the periphery of the rotating element of the engine, thereby impelling the said element by reaction.

Search Class—

121—STEAM-ENGINES, subclass 61, Rotary, Impact, Reaction.

11. **ROTARY, ALTERNATING PISTONS.** Rotary internal-combustion engines comprising a stationary inclosing casing, sections of which in planes perpendicular to the axis of the engine are circular, and a plurality of partitions or pistons rotating about the axis of the said casing, together with means for causing the said pistons to advance alternately, whereby the space or chamber inclosed between two of the pistons and the casing and within which the burned gases act expansively to impel one of the pistons is caused to alternately enlarge and contract.

Search Class—

121—STEAM-ENGINES, subclass 48, Rotary, Alternating piston.

12. **ROTARY, GEARED PISTONS.** Rotary internal-combustion engines comprising a stationary inclosing casing and a plurality of rigid rotary members or pistons rotating therein, the peripheries of which pistons move in contact with the inner surface of the casing, said pistons engaging with each other in a manner similar to the meshing of ordinary gears, but the form of the engaging portions of the pistons not necessarily being such that one may drive the other continuously, both said pistons being impelled by the action of the burned gases thereupon and both acting to drive the power-shaft of the engine.

Search Class—

121—STEAM-ENGINES, subclass 54, Rotary, Geared piston.

13. **ROTARY, ROTATING ABUTMENT.** Rotary internal-combustion engines comprising a stationary inclosing casing, sections of which in planes perpendicular to the axis of the engine are circular, and a rotating element or piston therein, together with an element, designated an "abutment" in this classification, movable in itself, but fixed relatively to the rotary movement of the piston, the piston being a single rigid or solid structure, said casing, abutment, and a portion of the piston inclosing an annular space or chamber within which the burned gases are inclosed and permitted to act expansively, thereby impelling the piston, the abutment aforesaid partaking of a continual rotary motion.

Search Class—

121—STEAM-ENGINES, subclass 51, Rotary, Geared abutment, and the subclasses thereof.

14. **ROTARY, SLIDING ABUTMENT.** Internal-combustion engines differing from those occurring in the preceding subclass in that the abutment partakes of a reciprocatory motion of translation.

Search Class—

121—STEAM-ENGINES, subclass 67, Rotary, Sliding abutment, and the subclass thereunder.

15. **ROTARY, SWINGING ABUTMENT.** Internal-combustion engines differing from those occurring in subclass 13, Rotary, Rotating abutment, in that the abutment partakes of an oscillating or swinging motion about a given axis.

Search Class—

121—STEAM-ENGINES, subclass 82, Rotary, Swinging abutment, and the subclasses thereof.

16. **ROTARY, SLIDING PISTON.** Rotary internal-combustion engines comprising a stationary inclosing casing and a rotating member therein, the rotating member including an element or piston carried by and partaking of the rotary motion of said rotating member and being also movable relatively thereto, said casing, rotating member, and piston inclosing an annular space or chamber within which the burned gases are inclosed and permitted to act expansively, thereby impelling the piston, the said piston partaking of a reciprocatory motion of translation with reference to the rotating member.

Search Class—

121—STEAM-ENGINES, subclasses under Rotary, Sliding piston.

17. **ROTARY, SWINGING PISTON.** Rotary internal-combustion engines in which the piston partakes of an oscillating or swinging motion about an axis carried by the rotating member.

Search Class—

121—STEAM-ENGINES, subclass 82, Rotary, Swinging abutment, and the subclasses thereof.

CLASS 123—Continued.

18. **OSCILLATING PISTON.** Internal-combustion engines irrespective of cycle or mode of operation, comprising a stationary inclosing casing, sections of which perpendicular to its axis are bounded by circular arcs concentric to said axis, and a movable member or piston therein moving in contact with the inner walls of the said casing, said piston partaking of an oscillating or swinging motion about the axis of the casing and, together with the walls thereof, inclosing a space or chamber within which the burned gases act expansively to impel the piston.

Search Class—

121—STEAM-ENGINES, subclass 43, Oscillating piston.

19. **LIQUID PISTON.** Internal-combustion engines in which a body of liquid is interposed between the burned gases and the working piston or equivalent element, whereby power is communicated to the main driving-shaft of the engine, the said liquid preventing the burned gases within the combustion-chamber and working cylinder from coming into direct contact with the working piston or equivalent element.

20. **STEAM CONVERTIBLE.** Engines designed to be operated either by steam generated by means independent of the engine and supplied thereto under pressure or by a combustible mixture of air and hydrocarbon as interchangeable sources of power and means for converting the engine from one type to the other, whereby a single engine structure may be operated either as a steam or as an internal-combustion engine. This subclass also contains devices in the nature of attachments or auxiliary devices designed to be applied to existing engines to enable them to be operated either as steam or as internal-combustion engines. The engines in this subclass may use either steam or a combustible mixture as a source of power, but not both at the same time.

Note.—For engines operated by steam and a combustible mixture acting in separate working cylinders or chambers or acting in a single working cylinder or chamber upon alternate working strokes, see in this class, subclass 4, Combined devices, Internal-combustion and fluid-pressure.

Note.—For engines operated by a combustible mixture and steam mixed together to form the successive charges, see in this class, subclass 25, Water and hydrocarbon.

21. **CONVERTIBLE CYCLE.** Internal-combustion engines having a cylinder and a working piston reciprocating therein, but irrespective of other structural features, in which means are provided whereby the mode of operation of the engine may be determined and the engine caused to operate upon either a two-stroke or a four-stroke cycle.

22. **INTERNAL COMBUSTION AND AIR.** Engines including in their structure elements normally found only in hot-air engines and other elements normally found only in internal-combustion engines and having steps in their cycle of operation peculiar to both such types of engines. This subclass includes engines including elements selected from both the above-mentioned types and convertible either at will or automatically, as by a suitable governing device, so as to operate either as hot-air or as internal-combustion engines, and engines operating upon a predetermined cycle, including working strokes, upon which the piston is impelled alternately by gases heated within the working cylinder by combustion, as in internal-combustion engines, and by gases heated within the working cylinder by contact with the inner surface of said working cylinder and the clearance-space.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclasses 61, Double-acting, Two-cycle, and 68, Two-cycle, Pump compression.

23. **SOLID FUEL.** Internal-combustion engines in which a solid non-explosive fuel or combustible is introduced into and burned within the working cylinder of an internal-combustion engine or into a combustion-chamber in permanently open communication therewith and the energy of the resulting gases converted into work by permitting them to expand and act upon a piston moving in the said cylinder. The solid fuel may be introduced into the working cylinder upon each successive cycle of operation of the engine and in quantities sufficient only to supply the energy required for the successive working strokes of the engine, or it may be introduced at comparatively long intervals of time and in quantities sufficient to furnish energy for several working strokes, in which case air only is supplied upon the successive cycles of operation to consume portions of the charge of fuel already within the engine.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclasses 24, Gunpowder, and 136, Charge-forming devices, Oil-feeding, for feeding mechanism available generally for the purpose of supplying solid fuel to engines of the type occurring in this subclass.

24. **GUNPOWDER.** Internal-combustion engines in which a charge of gunpowder or other explosive substances is supplied to and exploded within the cylinder of the engine or combustion-chamber in communication therewith and the energy of the resulting gases converted into work by permitting them to act upon a moving part of the engine. This subclass is intended to include all engines using an explosive substance as above, irrespective of other structural features, cycle, or mode of operation.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclasses 23, Solid fuel, and 136, Charge-forming devices, Oil-feeding, for feeding mechanism available generally for the purpose of supplying the explosive substance to engines of the type occurring in this subclass.

CLASS 123—Continued.

25. **WATER AND HYDROCARBON.** Internal-combustion engines having a cylinder and a working piston reciprocating therein, but irrespective of other structural features, cycle, or mode of operation, in which the combustible mixture supplied to and burned within the working cylinder contains a quantity of aqueous vapor or in which water in any form is supplied to the working cylinder after a charge has been ignited therein. The water may be supplied to the air and hydrocarbon before the charge is ignited, in which case the combustible charge is made up of air, hydrocarbon, and aqueous vapor, or a combustible mixture of air and hydrocarbon may be ignited in the working cylinder, the water being supplied to the expanding gases therein during the working stroke. In cases where water in the form of steam is supplied to the combustible mixture, as above, the steam is frequently generated by means of heat ordinarily lost in the operation of the engine, as by the heat of the exhaust-gases, or the cooling-jacket may be utilized as a steam-generator to supply water to the combustible charge.

Note.—For engines designed to be operated either as a steam or as an internal-combustion engine and convertible at will into either type, see in this class, subclass 20, Steam convertible, and for engines designed to use both steam and a combustible mixture at the same time, either in separate and distinct working chambers or upon alternate working strokes in a single working chamber, see in this class, subclass 4, Combined devices, Internal-combustion and fluid-pressure.

26. **ADDITIONAL AIR-SUPPLY.** Internal-combustion engines in which a combustible mixture is ignited in the working cylinder at the beginning of the working stroke, as in the ordinary operation of internal-combustion engines, after which and at some time before the end of the working stroke an additional quantity of compressed air or equivalent non-combustible gas is supplied to the working cylinder and mingles with the burned gases therein, the piston being impelled through the remaining portion of its working stroke by the combined action of the burned gases and the air supplied thereto.

27. **BURNING BY HIGHLY-COMPRESSED AIR.** Internal-combustion engines in which air or equivalent non-combustible gas is supplied to the working cylinder and compressed therein by a distinct compression-stroke of the working piston to such a degree that the temperature of the gas rises to such a point that a combustible supplied thereto will be ignited by the highly-compressed non-combustible gas upon coming into contact therewith, after which and after the beginning of the working stroke a combustible upon being supplied to the body of the compressed non-combustible gas ignites as it comes into contact therewith and burns at constant pressure or perhaps constant temperature. The cycle upon which the engines occurring in this subclass operate is sometimes designated by text-writers as the "Diesel" cycle.

Note.—For engines in which gas is burned at constant pressure, see in this class, subclasses 61, Double-acting, Two-cycle, and 68, Two-cycle, Pump compression.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclasses 32, Oil-engines, Internal-vaporizing, Forced oil-supply, and 33, Oil-engines Internal-vaporizing, Forced oil-supply, Oil-atomizing.

OIL-ENGINES. The "oil-engine" subclasses contain internal-combustion engines having a cylinder and a working piston reciprocating therein, but irrespective of other structural features, cycle, or mode of operation, which are designed to be operated by a liquid hydrocarbon and in which the means concerned with the supply and vaporization of the oil are so closely associated with the elements constituting the engine that a true combination would appear to exist between the two sets of elements. A given mechanism including an engine and means for supplying oil thereto to be burned therein is not classified as an oil-engine merely because it is designed to use oil as a source of power if the means whereby the oil or vapor is supplied to the engine is capable of separation therefrom and of use with other engines without affecting the operation of either the engine or the oil-supplying devices. A given structure will be classified in these subclasses only in cases where mechanical separation of the elements concerned with the supply or vaporization of the oil from the elements constituting the engine is impossible without defeating the operation of the device as a whole in the manner contemplated by the inventor, and a simple pipe or equivalent connection through which the exhaust-gases from the engine are conducted to the oil-supplying or vaporizing device to heat the same is not considered as bringing the two sets of elements into such intimate association as to make the whole mechanism a single device and as such classifiable as an oil-engine. From these considerations it therefore ordinarily follows that patents disclosing both an engine and a device for supplying it with oil or vapor therefrom and which do not come within the terms of the above definition, and are therefore not classifiable in oil-engine subclasses, are classified and cross-referenced according to the separate groups of elements entering into and forming the complete device, the oil supplying or vaporizing device ordinarily going into appropriate subclasses of Charge-forming devices and the engine into appropriate subclasses in this class, according to its form, mode of operation, or other distinguishing features.

28. **OIL-ENGINES, PUMP-SUPPLY TO AIR-INLET, FOUR-CYCLE.** Oil-engines in which oil in the liquid form and unmixed with air is supplied directly to an air-supply conduit leading to the working cylinder of the engine and adjacent to the main inlet-valve thereof by means of a pump operated by and in unison with the engine, said pump forcing the oil into the stream of air passing through the supply-conduit in a series of jets as the engine operates, which jets are generally but not

CLASS 123—Continued.

invariably in unison with the suction-strokes of the engine. The air to which the oil is supplied as above is always caused to flow into the working cylinder of the engine by suction upon the charging stroke, the engines in this subclass being invariably four-stroke-cycle engines. There is frequently no distinct vaporizing means present in the engines in this subclass, the oil being generally atomized by the air and the heat of the cylinder and the combustion-chamber being relied upon to vaporize the oil after its entry therinto.

Search Class—

123—INTERNAL COMBUSTION ENGINES, subclasses 29, Oil-Engines, Pump-supply to air-inlet, Two-cycle; 32, Oil-engines, Internal-vaporizing, Forced oil-supply; 139, Charge-forming devices, Oil-feeding, Pumps, and 140, Charge-forming devices, Oil-feeding, Pumps, Governor-controlled, for oil-pumps available for the purpose of supplying oil to form the combustible charge in engines of the type occurring in this subclass.

29. OIL-ENGINES, PUMP-SUPPLY TO AIR-INLET, TWO-CYCLE. Oil-engines differing from those occurring in the preceding subclass in that the engines operate upon a two-stroke cycle, the oil being supplied to the stream of air either as it enters the supply-pump forming a part of two-stroke-cycle engines or to the air as it passes from the supply-pump to the working cylinder of the engine.

Search Class—

123—INTERNAL COMBUSTION ENGINES, subclasses 32, Oil-engines, Internal-vaporizing, Forced oil-supply; 139, Charge-forming devices, Oil-feeding, Pumps, and 140, Charge-forming devices, Oil-feeding, Pumps, Governor-controlled, for oil-pumps.

30. OIL-ENGINES, INTERNAL-VAPORIZING. Oil-engines in which oil in the liquid form and either unmixed with air or mixed with a part only or with all the air necessary to form a complete combustible charge is supplied directly to the interior of the working cylinder of the engine or directly to the interior of the combustion-chamber or other chamber in permanently open communication with the working cylinder to be therein vaporized and ignited, the engine in question not coming within the terms of the definition of some one of the following internal-vaporizing subclasses. This subclass depends upon function rather than structure and includes oil-engines in which oil in the liquid form is supplied directly to the interior of the engine and vaporized therein, as above set forth, the engine in question not coming within the terms of the definition of one of the oil-engine subclasses preceding this, from which it follows that in the engines in this subclass there may frequently be but little or perhaps no separate and distinct vaporizer structure present, provided that the function set forth is carried out. In such cases the heat of the cylinder and combustion-chamber is ordinarily relied upon to vaporize the oil after its entry therinto. In the engines occurring in this and the following internal-vaporizing subclasses the combustible charge is frequently ignited by the same element that has previously acted to vaporize the oil, and the vaporizing element is frequently described as a combined vaporizing and igniting device and sometimes merely as an igniting device. The oil-engines in this and the following internal-vaporizing subclasses are designed to be operated by the less volatile hydrocarbon oils, and the vaporizing elements thereof are always heated to a high temperature by contact with the burning gases within the working cylinder or by heating means exterior to the working cylinder and vaporizing device. The vaporizing elements are always designed with special reference to such heating action and are ordinarily so designed with reference to the particular engine with which they are to be used as to be incapable of separation therefrom and use with other engines. This and the following internal-vaporizing subclasses includes in addition to patents disclosing a complete engine structure patents disclosing devices designed for and capable of use only with and as forming a part of, but which do not disclose all, the elements necessary to form a complete oil-engine of the type defined—as, for example, patents disclosing an internal-vaporizing device together with the combustion-chamber or working cylinder of the engine with which it is designed to be used or with a portion only of those elements.

31. OIL-ENGINES, INTERNAL-VAPORIZING, FOUR-CYCLE. Oil-engines differing from those defined in the preceding definition in that the engines are designed to operate upon a four-stroke cycle, the oil or mixture being caused to flow into the working cylinder by suction upon the charging stroke of the engine, or in cases where a part only of the elements necessary to form a complete engine is shown the parts disclosed are obviously designed to be used with and to form a part of an oil-engine operating upon a four-stroke cycle and would operate in the manner contemplated only when used with such an engine.
32. OIL-ENGINES, INTERNAL-VAPORIZING, FORCED OIL-SUPPLY. Internal-vaporizing oil-engines in which oil in the liquid form and unmixed with air is supplied under pressure directly to the interior of the working cylinder of the engine or directly to the combustion-chamber or other chamber in permanently open communication with such working cylinder to be therein vaporized and ignited, the oil being forced into the engine as above at any period of its cycle of operation. From the above it follows that the engines occurring in this subclass are independent of cycle and may be either two-stroke or four-stroke cycle engines. The oil is generally forced into the working cylinder by means including a pump operated by and in unison with the engine. The air necessary to form a combustible mixture with the oil may be supplied to the working cylinder in any way.

CLASS 123—Continued.

Search Class—

123—INTERNAL COMBUSTION ENGINES, subclasses 28, Oil-engines, Pump-supply to air-inlet, Four-cycle; 29, Oil-engines, Pump-supply to air-inlet, Two-cycle; 139, Charge-forming devices, Oil-feeding, Pumps, and 140, Charge-forming devices, Oil-feeding, Pumps, Governor-controlled, for oil-pumps available for the purpose of supplying oil to form the combustible charge in engines of the type occurring in this subclass.

33. OIL-ENGINES, INTERNAL-VAPORIZING, FORCED OIL-SUPPLY, OIL-ATOMIZING. Oil-engines differing from those defined in the preceding definition in that a mixture of oil in the liquid form and a small quantity of air, insufficient in amount to form a combustible charge with the oil, is supplied under pressure directly to the interior of the working cylinder of the engine, the air acting to more or less thoroughly atomize the oil.

Search Class—

123—INTERNAL COMBUSTION ENGINES, subclass 60, Two-cycle, Separate air and gas pumps.

34. OIL-ENGINES, EXTERNAL-VAPORIZING. Oil-engines in which oil is supplied to and vaporized by a vaporizing device located without the working cylinder and communicating therewith by a passage controlled by a valve depending upon the engine for its operation, the vapor thus produced without the working cylinder being caused to flow therinto either unmixed with air or mixed with a part only or with all the air necessary to form a complete combustible charge. The oil-engines in this subclass are designed to be operated by the less volatile hydrocarbon oils, and the vaporizing elements thereof are always heated to a high temperature by heat derived from some element of the engine. The vaporizing device is always designed with special reference to such heating action and is ordinarily so designed with reference to the particular engine with which it is to be used as to be incapable of separation therefrom and use with other engines. This subclass includes in addition to patents disclosing a complete engine structure patents disclosing devices designed for and capable of use only with and as forming a part of, but which do not disclose all, the elements necessary to form a complete oil-engine of the type herein defined—as, for example, patents disclosing an external-vaporizing device together with the combustion-chamber or working cylinder of the engine with which it is designed to be used or with a portion of those elements.

35. OIL-ENGINES, EXTERNAL-VAPORIZING, FOUR-CYCLE. Oil-engines differing from those defined in the preceding definition in that the engines are designed to operate upon a four-stroke cycle, the oil or mixture being caused to flow into the working cylinder by suction upon the charging stroke of the engine, or in cases where a part only of the elements necessary to form a complete engine is shown the parts disclosed are obviously designed to be used with and to form a part of an oil-engine operating upon a four-stroke cycle and would operate in the manner contemplated only when used with such an engine.

36. MULTIPLE EXPANSION. Internal-combustion engines having reciprocating pistons, but irrespective of other structural features, cycle, or mode of operation, in which the burned gases act to do work by expanding successively in two or more working cylinders. All engines of the reciprocating type in which it is attempted to more completely utilize the energy of the combustible charge by causing the gases resulting from the ignition thereof to expand in successive working cylinders or successively in a single cylinder.

Search Class—

121—STEAM-ENGINES, in the subclasses under Multiple expansion.

37. MULTIPLE EXPLOSION. Internal-combustion engines having a cylinder and working piston reciprocating therein, but irrespective of other structural features, cycle, or mode of operation, in which two or more separate and distinct charges of combustible mixture are burned and act in succession upon the working piston during each working stroke thereof, each charge after the first upon ignition entering the cylinder and mingling with and tending to increase the pressure of the burned gases already therein.

38. ATMOSPHERIC. Internal-combustion engines of the reciprocating type wherein the working piston is permanently connected with the main driving-shaft of the engine in which a combustible mixture is burned within the working cylinder thereof and the resulting gases cooled and condensed, thereby producing a more or less perfect vacuum within the said working cylinder, whereupon atmospheric pressure acts upon the said working piston to move it through a working stroke. The pressure of the atmosphere may be the only force acting upon the working piston, or the engine may be so designed that the combustible gases upon being ignited generate pressure which also acts upon the said working piston.

39. NON-COMPRESSION. Internal-combustion engines of the reciprocating type, but irrespective of other structural features, in which the combustible mixture is ignited in the working cylinder at or substantially at atmospheric pressure. The combustible mixture ordinarily begins to enter the working cylinder at the beginning of the working stroke, in which case it is ignited at atmospheric pressure, as above, after a definite portion of the working stroke has been performed and the whole charge supplied, the engine thus working upon

CLASS 123—Continued.

a two-stroke cycle without compression. The charge may, however, be drawn into the working cylinder by a distinct charging stroke, such stroke being followed by a stroke corresponding with the compression-stroke in four-cycle engines, during which the exhaust-valve is held open and the charge then ignited under atmospheric pressure at the beginning of the third or working stroke, in which case the engine works upon a four-stroke cycle without compression.

Note.—Engines in this subclass working on the two-stroke cycle without compression, as above, differ from the majority of the engines occurring in the subclass of 68, Two-cycle, Pump compression, and engines working upon a similar cycle occurring in the subclass 61, Double-acting, Two-cycle, only in the degree of pressure under which the charge exists before the ignition thereof.

Search Class—

123—INTERNAL COMBUSTION ENGINES, subclass 38, Atmospheric.

40. **VACUUM-EXHAUST.** Internal-combustion engines having a cylinder and a working piston reciprocating therein, but irrespective of other structural features, cycle, or mode of operation, in which it is attempted to secure a more complete removal of the burned gases from the cylinder after they have expanded therein by establishing at the end of the working stroke a communication between the interior of the cylinder and a chamber in which a more or less perfect vacuum exists, whereby the burned gases or the portion thereof remaining after allowing the greater part of such gases to escape in the ordinary manner flow into the vacuum-chamber. The engines in this subclass are ordinarily two-cycle engines, and the flow of the burned gases into the vacuum-chamber generally induces a simultaneous flow of a fresh charge into the working cylinder.

41. **REVERSIBLE.** Internal-combustion engines having a cylinder and a working piston reciprocating therein, but irrespective of other structural features, cycle, or mode of operation, in which means are provided for causing the engine to run in either direction at the will of the operator and subordinate mechanism for accomplishing the same result, but not disclosed in connection with all the elements necessary to form a complete and operative engine.

Note.—In this connection it should be observed that engines working upon a two-stroke cycle are frequently capable of operating in either direction without addition to or change in the elements necessary to the operation thereof, and this is especially true of the engines in the subclasses of 73, Two-cycle, Rear compression, Crank-case; 74, Two-cycle, Rear compression, Cylinder; 71, Two-cycle, Pump and cylinder coaxial, and 40, Vacuum-exhaust. Internal-combustion engines inherently capable of operation in either direction are not included in this subclass.

Search Class—

121—STEAM-ENGINES, subclass 100, Valve-gear, Shifting eccentric, for such types of revolving mechanism for internal-combustion engines as include a cam, eccentric, or similar element, together with means for shifting the position of such element relatively to the main crank of the engine.

42. **OSCILLATING CYLINDER.** Internal-combustion engines having a cylinder and working piston reciprocating therein, but irrespective of other structural features, cycle, or mode of operation, in which the working cylinder partakes of an oscillatory motion about a fixed axis as the piston reciprocates therein.

Search Class—

121—STEAM-ENGINES, subclass 42, Oscillating cylinder.

43. **ROTATING CYLINDER.** Internal-combustion engines having a cylinder and working piston reciprocating therein, but irrespective of other structural features, cycle, or mode of operation, in which the working cylinder partakes of a continuous rotary motion about a fixed axis as the working piston reciprocates therein and engines including a plurality of working cylinders each coming within the terms of this definition, the engine in question not coming within the terms of the definition of the subclass following this.

Search Class—

121—STEAM-ENGINES, subclass 62, Rotary, Reciprocating piston, and subclasses thereof.

44. **ROTATING CYLINDER, RADIAL.** Internal-combustion engines differing from those occurring in the preceding subclass in that axial lines of the rotating cylinders lie in a plane perpendicular to the crank-shaft of the engine and are also radial thereto, the cylinders or cylinder when one only is disclosed being immovable relatively to the member by which they are carried and with which they rotate.

Search Class—

121—STEAM-ENGINES, subclass 62, Rotary, Reciprocating piston, and the subclasses thereof.

45. **ROTARY RECIPROCATING PISTON.** Internal-combustion engines having a cylinder and a working piston reciprocating therein, but irrespective of other structural features, cycle, or mode of operation, in which the working piston rotates or oscillates upon its longitudinal axis and that of the working cylinder as it reciprocates therein and in so doing opens and closes in proper order the various ports necessary to supply combustible mixture to and to permit the exhaust of the burned gases from the engine, the periphery of the piston or an extension thereof forming a closure for the supply and exhaust ports when they are required to be closed.

CLASS 123—Continued.

46. **FREE PISTON.** Internal-combustion engines having a cylinder and one or more reciprocating pistons therein, one at least of which pistons is movable freely and independently of the main shaft of the engine on the stroke of such piston immediately following the ignition of the charge, during which stroke the energy of the burned gases is stored and thereafter transferred to the main shaft of the engine. Ordinarily the freely-movable piston is the only piston employed in engines in this subclass. The energy is ordinarily stored by forcing the piston against the pressure of the atmosphere; and the stored energy is ordinarily transferred to the main shaft by securing the piston thereto by means of a suitable clutch provided with suitable converting mechanism upon its return stroke.

47. **VALVED PISTON.** Internal-combustion engines having a cylinder and working piston reciprocating therein, but irrespective of other structural features, cycle, or mode of operation, the said working piston being provided with a passage leading into the working cylinder and controlled by a valve depending upon the engine for its operation, said valve being concerned either with the supply of the successive combustible charges to the working cylinder or with the exhaust of the burned gases therefrom.

48. **ADJUSTABLE COMBUSTION-CHAMBER.** Internal-combustion engines having a cylinder and a working piston reciprocating therein, but irrespective of other structural features, cycle, or mode of operation, in which means are provided whereby the volume of the clearance-space or combustion-chamber may be varied or adjusted either manually or automatically, as by a suitable governing device, to thereby insure a proper degree of compression of the combustible charge before ignition thereof.

Search Class—

123—INTERNAL COMBUSTION ENGINES, subclass 78, Four-cycle, Variable clearance, for internal-combustion engines in which the volume of the clearance-space is varied in unison with the exhaust-stroke, such action being a definite step in each cycle of operation of the engine.

49. **VALVE-CONTROLLED COMBUSTION-CHAMBER.** Internal-combustion engines of the reciprocating type, but irrespective of other structural features, cycle, or mode of operation, in which a combustible mixture is supplied to and burned within a combustion-chamber communicating with the working cylinder by a passage provided with a valve and upon communication with the cylinder being established by the operation of the valve aforesaid the burned gases allowed to expand, thereby acting upon the working piston of the engine, the valve-controlled chamber and the working cylinder being both contained in a single engine structure and in such intimate association that mechanical separation of the two would be impossible without defeating the operation of the engine as a whole, the combustible mixture or the constituents thereof being supplied to the combustion-chamber prior to each successive working stroke and in quantities sufficient only for such working stroke and the burned gases being conducted immediately to the working cylinder, there being no storage of burned gases contemplated and no element present by means of which a quantity of burned gases greater than that required for each successive working stroke could be produced and stored.

Search Class—

60—MISCELLANEOUS HEAT-ENGINE PLANTS, subclasses 4, Rotary engine; 28, Pressure generators; 36, Pressure generators, Air, Combustion products injected; and 37, Pressure generators, Air, Combustion products injected, Explosion, for devices resembling those in this subclass so far as the function of the machine as a whole is concerned, but in which the chamber in which combustion takes place is separate and distinct from the engine and is adapted to be used with various types of engines.

50. **RECIPROCATING CYLINDER.** Internal-combustion engines comprising a cylinder and a piston therein, the cylinder being capable of reciprocatory movement in a straight line relatively to the piston and the piston being either immovable or adapted for simultaneous movement in a direction opposite to the movement of the said movable cylinder, whereby the gases resulting from the combustion of a combustible mixture within the cylinder as they expand act upon the movable cylinder and transmit power therefrom to the main driving-shaft of the engine or act upon the movable cylinder and the piston, when it also is movable, to transmit power through both said elements.

51. **MULTIPLE PISTON.** Internal-combustion engines comprising two working pistons moving simultaneously in opposite directions in a single cylindrical structure composed of two working cylinders arranged tandem with a combustion-chamber between and in permanently open communication with both said cylinders or two working pistons moving in like manner in two similarly-arranged cylinders whose axial lines when extended are parallel and adjacent and which communicate with a single combustion-chamber, as above, whereby the gases resulting from the combustion of a combustible mixture within the combustion-chamber as they expand act with equal pressure upon both pistons and transmit substantially equal amounts of power through each piston to the main driving-shaft of the engine, and internal-combustion engines comprising two or more such units as are above defined.

Search Class—

121—STEAM-ENGINES, subclass 41, Multiple piston.

CLASS 123—Continued.

52. **MULTIPLE CYLINDER.** This and the following multiple-cylinder subclasses include internal-combustion engines of the reciprocating type having two or more working cylinders and a single working piston in each cylinder, but irrespective of cycle or mode of operation.

Search Class—

121—STEAM ENGINES, appropriate subclasses.

53. **MULTIPLE CYLINDER, SIMULTANEOUS EXPANSION.**

Multiple-cylinder internal-combustion engines having two or more separate and distinct working cylinders, a single working piston reciprocating in each cylinder, and a single combustion-chamber communicating with all of said working cylinders, together with means whereby the burned gases resulting from the ignition of a combustible charge in the combustion-chamber are permitted to act simultaneously upon all of the said working pistons to drive them through the whole or through a part only of their working stroke. The pistons in all the cylinders perform their working stroke at the same time, one piston, however, sometimes moving somewhat in advance of the others, and there is frequently an attempt to keep the fresh combustible mixture separate from the residual products of combustion from the previous charge, as by leading the supply-conduit into one working cylinder, while the exhaust-conduit leads from another.

Note.—The engines occurring in this subclass differ from engines having a somewhat similar mode of operation occurring in the subclass of 51, Multiple piston, in this class, in that the engines occurring in this subclass always include separate and distinct working cylinders, while the engines occurring in the other subclass might generally be described as having a single working cylinder with two working pistons moving therein.

54. **MULTIPLE CYLINDER, CYLINDERS OFFSET.**

Multiple-cylinder internal-combustion engines in which axial lines passed through the separate single cylinders, or a single axial line through two or more cylinders when arranged tandem, or axial lines through two or more series of cylinders, each series arranged tandem, would, if extended, pass to one side of—that is, would not intersect—the main shaft of the engine.

55. **MULTIPLE CYLINDER, CYLINDERS RADIATING.**

Multiple-cylinder internal-combustion engines in which axial lines passed through the separate single cylinders would, if continued, intersect the main shaft of the engine at right angles. The several cylinders are ordinarily arranged at equal angular intervals around the shaft, and ordinarily axial lines as above would all lie in a single plane at right angles to the main shaft.

56. **MULTIPLE CYLINDER, CYLINDERS OPPOSITE.**

Multiple-cylinder internal-combustion engines in which the cylinders are arranged in pairs one upon either side of the main shaft of the engine, axial lines through the separate cylinders when extended being either coincident or parallel and intersecting the said shaft at right angles, and when more than one pair of cylinders arranged as above is used the axial lines of all the cylinders lying in a single plane passing through the longitudinal axis of the said main shaft.

57. **MULTIPLE CYLINDER, CYLINDERS TANDEM.**

Multiple-cylinder internal-combustion engines in which the cylinders are arranged all upon one side of the main shaft of the engine, the pistons being all rigidly connected together and moving in unison in the same direction, the axial line through the series of cylinders when extended intersecting the said shaft at right angles, and when more than one series of cylinders arranged as above is used the axial lines of all the series of cylinders lying in a single plane passing through the longitudinal axis of the said main shaft.

58. **MULTIPLE CYLINDER, CYLINDERS PARALLEL.**

Multiple-cylinder internal-combustion engines in which axial lines passed through the separate single cylinders are parallel with the main shaft of the engine. Such axial lines are ordinarily at equal radial distances from the axis of the main shaft and are arranged around said shaft at equal angular intervals.

59. **MULTIPLE CYLINDER, CYLINDERS LONGITUDINAL.**

Multiple cylinder internal-combustion engines in which the separate cylinders are arranged in line along the main shaft of the engine, axial lines through the separate cylinders when extended intersecting the said shaft at right angles, and the axial lines through the several cylinders all lying in a single plane passing through the longitudinal axis of the said main shaft.

60. **MULTIPLE CYLINDER, CYLINDERS LONGITUDINAL, CRANKS COINCIDENT.**

Multiple-cylinder internal combustion engines fulfilling the conditions enumerated in the definition of the preceding subclass and having the further distinguishing feature that the cranks of the two cylinders coincide angularly—that is, there is no angular distance between the two cranks—the engines in this subclass being invariably two-cylinder engines. Each cylinder of the engines occurring in this subclass operates upon a four-stroke cycle with compression of the combustible charge previous to the ignition thereof, the working stroke of one cylinder coinciding with the suction-stroke of the other, and because of the arrangement of the cranks a single impulse is imparted to the crank-shaft during each revolution thereof.

CLASS 123—Continued.

61. **DOUBLE-ACTING, TWO-CYCLE.** Internal-combustion engines working on a two-stroke cycle and in which successive burned charges act upon opposite sides of a single piston reciprocating in a single cylinder, whereby the working piston is impelled alternately in each direction. Includes two-cycle engines operating upon recompression and also two-cycle engines operating upon pump-compression cycles, both of which terms are more fully explained hereinafter. The working cylinder in the engines in this subclass is of simple cylindrical form, and the supply-pump for the combustible mixture is wholly separate and distinct from the working cylinder and is not considered in this definition.

62. **DOUBLE-ACTING, TWO-CYCLE, COMBINED PUMP AND MOTOR CYLINDER.** Internal-combustion engines working on a two-stroke cycle and in which successive combustible charges after ignition thereof act so as to impel the working piston alternately in each direction, the elements of the engine and of the pump for supplying the combustible mixture thereto being all contained within a single cylinder structure and so intimately associated as to make mechanical separation of the two sets of elements impossible without defeating the operation of the engine as a whole.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclass 66, Two-cycle, Combined pump and motor cylinder.

63. **DOUBLE-ACTING, FOUR-CYCLE.** Internal-combustion engines working on the four-stroke cycle, hereinafter defined, in which successive burned charges act alternately upon opposite sides of a single reciprocating piston moving in a single cylinder.

64. **SIX-CYCLE.** Internal-combustion engines of the reciprocating type working upon a modified four-stroke cycle with recompression in the working cylinder, as defined in the definition of subclass 75, Four-cycle, below, and in which air unmixed with combustible is drawn into and expelled from the working cylinder one or more times upon distinct suction and expelling strokes of the working piston after the end of the exhaust-stroke and before the beginning of the suction-stroke of the normal four-stroke cycle, whereby a more complete removal of the burned gases from the working cylinder and combustion-chamber is secured.

65. **TWO-CYCLE.** Internal-combustion engines having a single single-acting working cylinder and a single working piston reciprocating therein and having suitable means for supplying a combustible mixture thereto, such engines working on the two-stroke cycle and not coming within the definitions of the following subclasses of two-cycle engines. Internal-combustion engines are said to work upon the two-stroke cycle when a combustible mixture under pressure materially greater than atmospheric pressure is burned and the resulting products of combustion allowed to expand within the working cylinder upon every second stroke of the working piston of the engine. The means for supplying the combustible mixture to the engine ordinarily includes a pump operated by and in unison therewith, which pump and engine are generally inseparable without destroying the identity of the device as a whole. In the engines occurring in two-cycle subclasses a combustible mixture is supplied to the working cylinder and burned therein under pressure upon each second stroke of the working piston, and such mixture after having been supplied to the working cylinder at a pressure not necessarily greater than is sufficient to insure its flow thereinto may be recompressed therein by the working piston or by the working and pump pistons acting together before ignition and the beginning of the working stroke, which is the more ordinary mode of operation, or the mixture may be supplied to the working cylinder after the beginning of the working stroke and at the maximum pressure under which it exists before ignition, in which case it is not recompressed in the working cylinder before ignition, but is ignited either at constant pressure as it enters or at constant volume after the whole charge has been supplied. Two-cycle engines coming within the latter of the above cases are classified as two-cycle pump-compression engines. The combustible mixture is ordinarily supplied to the working cylinder by a pump, and in the first of the above cases, while the charge may be compressed to a considerable degree by the supply-pump, such charge enters the working cylinder only against the pressure of the atmosphere and after having entered must exist therein at or substantially at atmospheric pressure, and the initial compression of the charge upon which the efficiency of an internal-combustion engine so largely depends is produced wholly by recompression of the charge in the working cylinder, while in the second case such initial pressure is produced wholly by the supply-pump which compresses the charge directly to the maximum pressure at which it exists before ignition.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclasses 49, Valve-controlled combustion-chamber; 61, Double-acting, Two-cycle, and 62, Double-acting, Two-cycle, Combined pump and motor cylinder.

66. **TWO-CYCLE, COMBINED PUMP AND MOTOR CYLINDER.** Two-cycle internal-combustion engines in which separate and distinct working and pumping pistons operate in a single cylinder, a portion of which, together with the working piston, forms a motor, while another portion of such cylinder, together with the pumping-piston, forms a pump for supplying a fresh charge to the working cylinder. The supply-pump is operated by and in unison with the engine, and as the supply-pump and motor elements of the engine are all contained in a single cylinder the two sets of elements are necessarily inseparable without wholly defeating the operation of the engine in the manner contemplated.

CLASS 123—Continued.

Search Class—

123—INTERNAL COMBUSTION ENGINES, subclass 62, Double-acting, Two-cycle, Combined pump and motor cylinder.

67. **TWO-CYCLE, DIVIDED PUMP DISCHARGE.** Two-cycle internal-combustion engines in which the air pumped by a single supply-pump operated by and in unison with the engine is separated or divided into two separate and distinct streams, one of which passes to the working cylinder unchanged, while the other receives a supply of hydrocarbon on its way to the working cylinder. The stream to which no hydrocarbon is supplied ordinarily acts to more or less thoroughly expel the burned gases from the working cylinder prior to the formation of a new charge therein, and the two streams frequently reunite as they enter the working cylinder or shortly before their entry thereinto.

68. **TWO-CYCLE, PUMP COMPRESSION.** Two-cycle internal-combustion engines in which the combustible mixture, or both the constituents thereof, is supplied to the working cylinder under pressure materially greater than atmospheric pressure, such supply beginning at the beginning of the working stroke and continuing for a determinate portion thereof, the combustible mixture being ignited either at constant pressure as it enters the cylinder or at constant volume after the whole charge has been supplied thereto, in either case without recompression in the working cylinder. The combustible mixture or the constituents thereof may be supplied directly to the working cylinder without preliminary storage or may be supplied to suitable reservoirs interposed between the compressing means and the working cylinder and within which a considerable volume of combustible mixture, or its constituents, is stored. Engines in this subclass in which ignition takes place after the whole charge has been supplied to the working cylinder differ from those in subclass 39, Non-compression, which work upon a two-stroke cycle, only in the degree of compression to which the charge is subjected before ignition, and as some of the engines in the subclass above mentioned are provided with a supply-pump for forcing air through a charge-forming device to the cylinder of the engine the combustible mixture thus produced is necessarily supplied to such engines under some pressure. However, where the structure and operation of the device as a whole clearly indicate that the pressure under which the charge is supplied is so slight as to be sufficient only to insure its flow into the working cylinder the engine is classified in subclass 39, Non-compression. In engines working on the two-cycle pump-compression cycle the whole charge properly mixed to form a combustible mixture may be compressed by a single pump or the air and combustible may be compressed by separate pumps to be mixed on their way to the working cylinder or after such constituents have entered thereto.

Search Class—

123—INTERNAL COMBUSTION ENGINES, subclass 61, Double-acting, Two-cycle, for double-acting engines working on the two-stroke pump-compression cycle; subclasses 32, Oil-engines, Internal-vaporizing, Forced oil-supply, and 33, Oil-engines, Internal-vaporizing, Forced oil-supply, Oil-atomizing, for oil-engines operating upon a cycle similar to that defined by this definition.

69. **TWO-CYCLE, SEPARATE AIR AND GAS PUMPS.**

Two-cycle recompression internal-combustion engines in which air and combustible in the gaseous form are supplied to the working cylinder or combustion-chamber by separate and distinct pumps, each operated by and in unison with the engine, one at least of the constituents being recompressed within the working cylinder before the ignition of the combustible mixture. The air is ordinarily supplied to the working cylinder of the engine before the gas, and such air is frequently designed to more or less completely scavenge the working cylinder. In such cases a part of the air thus supplied remains in the cylinder to form with the gas subsequently supplied thereto the next following charge. The air and gas may, however, enter the working cylinder simultaneously. The air and gas are ordinarily intermixed within the working cylinder before the completion of the compression-stroke, so that the complete charge is recompressed in the working cylinder before the ignition thereof and the beginning of the working stroke; but this subclass also includes engines in which one only of the constituents of the charge is recompressed in the working cylinder, in which case the other is supplied thereto under pressure during the working stroke.

Search Classes—

123—INTERNAL COMBUSTION ENGINES, subclasses 61, Double-acting, Two-cycle, and 68, Two-cycle, Pump compression, for other internal-combustion engines having separate pumps for air and gas.

123—INTERNAL COMBUSTION ENGINES, subclass 33, Oil-engines, Internal-vaporizing, Forced oil supply, Oil-atomizing, for oil-engines having one pump for supplying air to the working cylinder thereof and another for supplying oil and air, the oil being frequently atomized by the air, but not vaporized prior to its entry into the working cylinder.

70. **TWO-CYCLE, PUMP AND CYLINDER ADJACENT.**

Two-cycle recompression internal-combustion engines in which the working cylinder and the pump for supplying a combustible mixture thereto are located adjacent each other, axial lines through the pump and motor cylinders being parallel and perpendicular to the axis of the main shaft of the engine and both lying in a plane passing through the axis of the main shaft. In engines in this subclass the supply-pump is inseparable from the engine and may draw both air and hydrocarbon into the cylinder thereof upon the suction-stroke, so that the pump operates upon the whole charge to be supplied to the working cylinder, or the supply-pump

CLASS 123—Continued.

may draw in and discharge air only, in which case the combustible constituent of the charge is supplied to the air during its passage to the working cylinder.

Search Class—

123—INTERNAL COMBUSTION ENGINES, subclass 68, Two-cycle, Pump compression.

71. **TWO-CYCLE, PUMP AND CYLINDER COAXIAL.** Two-cycle recompression internal-combustion engines in which the axes of the working and pump cylinders form a single straight line which, if extended, would intersect the main shaft of the engine at right angles, the cylinders abutting and the working piston being prolonged and extended into the pump-cylinder and enlarged therein to form the pumping-piston, thereby forming an annular pumping-chamber which surrounds the extension of the working piston. From the above it follows that the working and pump pistons form a single rigid structure. In the engines in this subclass compression of the charge prior to the ignition thereof is effected by the joint action of the pump and motor pistons. The arrangement above defined may be reversed, in which case the cylinder above described as the working cylinder becomes the cylinder of the supply-pump and the annular pumping-chamber becomes the working chamber.

Note.—The supply-pump is inseparable from the engine and ordinarily operates upon the whole charge, as in engines in the subclass of 70, Two-cycle, Pump and cylinder adjacent.

72. **TWO-CYCLE, PUMP AND CYLINDER INCLINED.**

Two-cycle recompression internal-combustion engines in which the working piston and the pump for supplying a combustible mixture thereto are arranged at an angle to each other, axial lines through the pump and motor cylinders being perpendicular to the main shaft of the engine and lying in planes inclined to each other, which pass through the said main shaft. The axes of the pump and working cylinder also ordinarily lie in a single plane perpendicular to the main shaft of the engine.

Note.—The supply-pump is inseparable from the engine and ordinarily operates upon the whole charge, as in engines in the subclass 70, Two-cycle, Pump and cylinder adjacent.

73. **TWO-CYCLE, REAR COMPRESSION, CRANK-CASE.**

Two-cycle recompression internal-combustion engines having a cylinder closed at one end and an air-tight casing inclosing the connecting-rod and crank and forming a closed crank-case in open communication with the other end of the cylinder and a piston reciprocating in the said cylinder, such piston performing at the same time the functions of both a working piston and a piston for the pump which supplies a fresh charge to the engine, one end of the cylinder and the corresponding end of the piston constituting the working cylinder and piston, while the other or rear end of the piston and the corresponding end of the cylinder, together with the closed crank-case, form a pump for introducing a new charge into the working end of the cylinder. In engines in this subclass the supply or exhaust ports, or both, are generally formed in the cylinder-wall and are then controlled by the piston as it reciprocates, the piston forming a closure for such ports when it is required that they be kept closed.

74. **TWO-CYCLE, REAR COMPRESSION, CYLINDER.**

Two-cycle recompression internal-combustion engines having a cylinder closed at both ends and a piston reciprocating therein, such piston performing at the same time the functions of both a working piston and a piston for the pump which supplies a fresh charge to the engine, one end of the cylinder and the corresponding end of the piston constituting the working cylinder and piston, while the other or rear end of the piston and the corresponding end of the cylinder form a pump for introducing a new charge into the working end of the cylinder. In engines in this subclass the supply or exhaust ports, or both, are generally formed in the cylinder-wall and are then controlled by the piston as it reciprocates, the piston forming a closure for such ports when it is required that they be kept closed.

75. **FOUR-CYCLE.** Internal-combustion engines having a single

single-acting working cylinder and a single working piston reciprocating therein and in which the charge is compressed in the working cylinder before ignition, such engines working upon a cycle comprising four distinct strokes—namely, a working stroke following the ignition of the charge, followed by exhaust, charging, and compression strokes—and not coming within the terms of the definitions of the following four-cycle subclasses. This subclass is intended to include engines working upon cycles comprised of four strokes, as above, but varied or modified more or less from the simple four-stroke cycle above described, and such miscellaneous forms or types of engines working upon unmodified four-stroke cycles as do not come within the following four-cycle subclasses. Except in such engines as are classified in subclass 77, Four-cycle, Single-revolution, the cycle of four strokes requires two revolutions of the main shaft of the engine for its completion.

76. **FOUR-CYCLE, SCAVENGING.** Four-cycle internal-combustion engines in which a volume of air unmixing with combustible is caused to pass through the working cylinder of the engine or the combustion-chamber thereof at any time between the end of the working stroke and the beginning of the next following charging stroke, whereby to secure a more complete removal of the burned gases of the previous charge from the cylinder and combustion-chamber, so that the successive charges will be unmixed with residual burned gases from a previous charge. The scavenging action may take place be-

CLASS 123—Continued.

fore or after or be simultaneous with the regular exhaust-stroke of the engine. In the engines in this subclass a complete charge comprising all the ingredients necessary to form a combustible mixture enters the cylinder upon a distinct charging stroke, the air supplied for the purpose of scavenging not being necessary to form or complete the following charge.

Note.—Engines frequently described as scavenging-engines and in which a volume of air is caused to pass through the working cylinder and combustion-chamber for the same purpose as in this subclass, but in which a portion of such air is necessary to complete the following charge, are classified in this class, subclass 69, Two-cycle, Separate air and gas pumps. In subclass 76, Four-cycle, Scavenging, the engine begins its suction-stroke with air in the clearance-space only, while in engines in subclass 69, Two-cycle, Separate air and gas pumps, the engine begins its compression-stroke with a considerable volume of air in the cylinder thereof, to which a combustible is supplied to complete the charge.

Search Class—

123—INTERNAL COMBUSTION ENGINES, subclass 64, Six-cycle, and 69, Two-cycle, Separate air and gas pumps.

77. FOUR-CYCLE, SINGLE-REVOLUTION. Four-cycle internal-combustion engines in which a four-stroke cycle is carried out during a single revolution of the main shaft of the engine. For the purposes of this definition a continuous movement of the working piston in one direction is considered as two strokes and the sequence of the strokes is varied from that present in engines working on the ordinary four-stroke cycle, the working stroke being followed by the charging stroke as the piston moves in one direction and the exhaust and compression strokes taking place in the order named as the piston moves in the reverse direction.

Note.—For engines working on this cycle, but having two or more working cylinders, see in this class, subclass 53, Multiple cylinder, Simultaneous expansion.

Note.—For other engines in which the four strokes comprising a single cycle occur during a single revolution of the main shaft of the engine, see in this class, subclass, 78, Four-cycle, Variable clearance.

78. FOUR-CYCLE, VARIABLE CLEARANCE. Four-cycle internal-combustion engines provided with means whereby the clearance-space is varied in unison with the movement of the working piston, being as far as practicable eliminated at the end of the exhaust-stroke and greatest at the end of the compression-stroke, whereby to secure a more complete removal of the residual burned gases from the cylinder and combustion-chamber of the engine. The clearance-space is ordinarily varied by causing the strokes of the working piston to vary in length, and the four strokes required for a complete cycle are frequently performed during a single revolution of the main shaft of the engine.

79. FOUR-CYCLE, SINGLE PUPPET-VALVE. Four-cycle internal-combustion engines in which the combustible charge enters the working cylinder and after ignition and expansion the burned gases are exhausted therefrom through a single passage controlled by a single positively-operated puppet or equivalent valve, said common passage being provided with means for directing the flow of the combustible charge from a supply-conduit to the common conduit, and for directing the flow of the exhaust-gases from such common conduit into the exhaust-conduit leading from the engine. The directing means ordinarily comprise a valve or valves operated either positively or by the suction and pressure alternately existing in the common conduit, and such means are protected from the pressure of the gases within the cylinder by the single valve.

80. FOUR-CYCLE, ROTATING-VALVE. Four-cycle internal-combustion engines provided with a rotating valve for directly controlling the supply of combustible mixture to the working cylinder or the exhaust of burned gases therefrom and means operated by the engine for rotating the said valve to secure the continuous and automatic operation of the engine. The rotating valve in the engines in this subclass ordinarily controls both the supply to and the exhaust from the engine and frequently also a passage used in connection with a flame or incandescent igniting device, and the valve is so designed with reference to the particular engine with which it is used or with reference to other elements of the engine as to be incapable of convenient separation therefrom or of use with other engines.

Note.—For rotating valves capable of general use with internal-combustion engines, the structure of the engine or of elements thereof other than the valve not being involved, see in this class, subclass 190, Valves, Rotary.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclasses 144, Igniters, Flame, and 151, Igniters, Sparkers, Combined sparker and valve.

81. FOUR-CYCLE, OSCILLATING-VALVE. Four-cycle internal-combustion engines provided with an oscillating valve for directly controlling the supply of combustible mixture to the working cylinder or the exhaust of burned gases therefrom and means operated by the engine for oscillating the said valve to secure the continuous and automatic operation of the engine. The oscillating valve ordinarily controls both the supply to and the exhaust from the engine and frequently also a passage used in connection with a flame or incandescent igniting device, and the valve is so designed with reference to the particular engine with which it is used or with reference to

CLASS 123—Continued.

other elements of the engine as to be incapable of convenient separation therefrom or of use with other engines.

Note.—For oscillating valves capable of general use with internal-combustion engines, the structure of the engine or of elements thereof other than the valve not being involved, see in this class, subclass 190, Valves, Rotary.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclass 144, Igniters, Flame.

82. FOUR-CYCLE, ROTATING SIDE SHAFT. Four-cycle internal-combustion engines having a rotating shaft driven from the crank-shaft thereof and extending parallel to the axis of the working cylinder and ordinarily along the side of the engine, said shaft being provided with means, generally in the form of cams, for operating in the proper order one or more of the valves, the igniting device, or other element necessary for the continuous automatic operation of the engine, and mechanism including a rotating shaft located as above set forth and designed to operate the valves or other elements of the engine, but not shown in connection with all the elements necessary to form a complete and operative engine.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclass 57, Multiple cylinder, Cylinders tandem.

83. FOUR-CYCLE, ROTATING TRANSVERSE SHAFT. Four-cycle internal-combustion engines having a rotating shaft driven from the crank-shaft thereof and extending transverse to the axis of the working cylinder and clear across the engine, said shaft being provided with means, generally in the form of cams, for operating in the proper order one or more of the valves, the igniting device, or other element necessary for the continuous automatic operation of the engine, and mechanism including a rotating shaft located as above set forth and designed to operate the valves or other elements of the engine, but not shown in connection with all the elements necessary to form a complete and operative engine.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclass 84, Four-cycle, Adjacent supply and exhaust valves, for engines coming within the terms of this definition, except that the transverse shaft does not extend clear across the engine, the axis of such shaft lying in a plane passing through the axis of the working cylinder.

84. FOUR-CYCLE, ADJACENT SUPPLY AND EXHAUST VALVES. Four-cycle internal-combustion engines having the supply and exhaust valves thereof located adjacent and in a single valve-chamber, the axes of such valves being parallel with the axial line of the working cylinder and both valves being positively operated, and reciprocating rods extending longitudinally of the engine and operated by and in unison therewith for operating such valves in the proper order to secure the continuous automatic operation of the engine, and similar arrangements of valves and operating means therefor, but not shown in connection with all the elements necessary to form a complete and operative engine.

85. FOUR-CYCLE, ALINED SUPPLY AND EXHAUST VALVES. Four-cycle internal-combustion engines having the supply and exhaust valves thereof arranged in alinement and in a single valve-chamber, the common axis of such valves being parallel with the axial line of the working cylinder, and a reciprocating rod or rods extending longitudinally of the engine and operated by and in unison therewith for operating one or both such valves in the proper order to secure the continuous automatic operation of the engine, and similar arrangements of valves and operating means therefor, but not shown in connection with all the elements necessary to form a complete and operative engine.

86. FOUR-CYCLE, OPPOSITE SUPPLY AND EXHAUST VALVES. Four-cycle internal-combustion engines having the supply and exhaust valves thereof located in separate valve-chambers upon opposite sides of the working cylinder, the axes of such valves being parallel with the axial line of the working cylinder and lying in a plane passing therethrough and through the axis of the crank-shaft, and a reciprocating rod or rods extending longitudinally of the engine and operated by and in unison therewith for operating one or both of such valves in the proper order to secure the continuous automatic operation of the engine, and similar arrangements of valves and operating means therefor, but not shown in connection with all the elements necessary to form a complete and operative engine.

87. FOUR-CYCLE, LONGITUDINAL VALVE AND LEVER. Four-cycle internal-combustion engines having the supply or exhaust valve thereof, or both, located in the cylinder-head and disposed longitudinally to the working cylinder, the movement of such valve or valves being along a line parallel with the axial line of the working cylinder, a lever disposed transverse to the working cylinder, and a reciprocating operating member operated by and in unison with the engine for operating such valve or valves in the proper order to secure continuous operation thereof, and similar arrangements of valves and operating means therefor, but not shown in connection with all the elements necessary to form a complete and operative engine.

88. FOUR-CYCLE, TRANSVERSE VALVE AND LEVER. Four-cycle internal-combustion engines having the supply or exhaust valve thereof, or both, disposed transverse to the working cylinder, the axis of such valve or valves lying in a plane perpendicular to the axial line of the working cylinder,

CLASS 123—Continued.

and a lever extending longitudinally of the engine and operated by and in unison therewith for operating the valve or valves aforesaid in the proper order to secure the continuous automatic operation thereof, and similar arrangements of valves and operating means therefor, but not shown in connection with all the elements necessary to form a complete and operative engine.

89. **FOUR-CYCLE, TRANSVERSE VALVE AND BELL-CRANK.** Four-cycle internal-combustion engines having the supply or exhaust valve thereof, or both, disposed transverse to the working cylinder, the axis of such valve or valves lying in a plane perpendicular to the axial line of the working cylinder, and a bell-crank lever operated by and in unison with the engine for operating such valve or valves in the proper order to secure the continuous automatic operation thereof, and similar arrangements of valves and operating means therefor, but not shown in connection with all the elements necessary to form a complete and operative engine.

90. **VALVE-OPERATING MECHANISM.** Inventions relating to mechanism intermediate the crank-shaft of an internal combustion engine and the supply, exhaust, or fuel valve thereof or operating one or more of the said valves, the device in question not coming within the terms of some one of the following subclasses of valve-operating mechanism. The subclasses of valve-operating devices following this being all designed for use with engines operating upon a four-stroke cycle, it follows that the devices occurring in this subclass are either designed for use with engines operating upon a two-stroke cycle or are independent of the mode of operation of the engine and capable of use with engines operating upon a four-stroke or two-stroke cycle. Some of the valve-operating devices herein are disclosed in connection with four-cycle engines; but in such cases the valve mechanism is clearly not limited in its use to engines of that type, and in no case is the reducing mechanism of four-stroke-cycle engines—that is, the mechanism whereby a member is operated one-half as frequently as another element of the engine and from which first member the supply, exhaust, or fuel valve may be operated by means of a suitable valve-operating mechanism—involved in the devices in this subclass. Inventions relating to valve-operating mechanism designed for use with and to form a part of four-cycle engines of the form or type occurring in the nine preceding subclasses are classified in some one of those subclasses, according to the form or type of engine with which the valve-operating mechanism in question is used, from which it follows that in searches involving valve-operating means it should first be determined whether or not the device in question is not, in fact, a part of a definite form or type of engine, and therefore classifiable in some one of those type subclasses, rather than a valve-operating means of general application, such as would be found in this subclass.

Note.—Valve-operating means by which the engine is rendered reversible are classified in this class, subclass 41, Reversible.

Note.—Valve-operating mechanism described as designed for general use with fluid-pressure engines, irrespective of the mode of operation or the fluid by which such engines are operated, is classified in class 121, STEAM-ENGINES, subclass 97, Valve-gear, and the subclasses thereof, unless there is something about the device in question as disclosed in the specification and drawing especially adapting it for use with an internal-combustion engine and making its use with other types of fluid-pressure engines improbable, if not impossible, in which case the valve-operating mechanism is classified in this subclass.

Search Classes—

- 121—STEAM-ENGINES, subclass 97, Valve-gear, and the subclasses thereof, according to the type of the device in question.
230—AIR AND GAS PUMPS, subclass 34, Valves and valve-gear.

91. **VALVE-OPERATING MECHANISM, FOUR-CYCLE.** Mechanism intermediate the crank-shaft of an internal-combustion engine and the supply, exhaust, or fuel valve thereof for operating one or more of the said valves upon each fourth stroke of the working piston, the device in question being designed for and capable of use only with and as forming a part of an engine operating upon a four-stroke cycle and not coming within the terms of the following subclasses of four-cycle valve-operating mechanism. The patents often contain claims to subcombinations not limited by the terms of the claim to use with an engine operating upon a four-stroke cycle; but the devices as a whole as disclosed in the specification and as defined by the most specific claims are such as would be used only with and as forming a part of four-cycle engines.

Note.—For valve-operating mechanism in which the exhaust-valve or a member carried thereby is brought into engagement with the supply-valve to prevent the opening of said supply-valve during the exhaust-stroke of the engine, said valves being in axial alignment, see in this class, subclass 85, Four-cycle, Alined supply and exhaust valves.

92. **VALVE-OPERATING MECHANISM, FOUR-CYCLE, PNEUMATIC.** Valve-operating mechanism for four-cycle internal-combustion engines, said mechanism depending for its operation upon a gas under pressure either above or below atmospheric pressure. The valve-operating mechanisms occurring in this subclass ordinarily act upon the exhaust-valve of the engine and depend for their operation upon gas under pressure derived from the working cylinder at or near the end of the working stroke.

93. **VALVE-OPERATING MECHANISM, FOUR-CYCLE, DOUBLE-LOOP CAM.** Valve-operating mechanism for four-cycle internal-combustion engines, said mechanism including a cam having a groove or race made up of two loops

CLASS 123—Continued.

which intersect and cross each other, thereby forming a cam-race capable of development into a double-looped figure, resembling somewhat the figure 8.

94. **VALVE-OPERATING MECHANISM, FOUR-CYCLE, INTERMITTENTLY-OPERATED CAM.** Valve-operating mechanism for four-cycle internal-combustion engines, said mechanism including a cam or a disk having a series of cams arranged at intervals upon the periphery thereof and a pawl-and-ratchet or equivalent device for giving such cam a step-by-step rotary movement, the cam operating positively and either directly or through suitable mechanical elements upon the valve or valves to be operated.

95. **VALVE-OPERATING MECHANISM, FOUR-CYCLE, INTERMITTENTLY-OPERATED TAPPET.** Valve-operating mechanism for four-cycle internal-combustion engines, comprising a reciprocating member, a tappet member provided with one or more tappets carried by and moving with said reciprocating member and movable relatively thereto, and mechanically-operated means for moving the tappet member relatively to the reciprocating member to thereby remove the tappet thereof from the path of the valve-stem upon alternate movements of said movable member in the same direction. The tappet member is ordinarily in the form of a cylinder or disk having recesses in the periphery thereof to alternately engage and miss the end of the valve-stem as the said member is reciprocated, with a pawl-and-ratchet device for giving such disk or cylinder a step-by-step rotary motion.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclass 92, Valve-operating mechanism, Four-cycle, Pneumatic, for valve-operating mechanism coming within the terms of this definition, except that the tappet member is operated by a gas under pressure.

96. **VALVE-OPERATING MECHANISM, FOUR-CYCLE, TWO-TO-ONE GEARING.** Valve-operating mechanism for four-cycle internal-combustion engines, said mechanism including a train of bevel, spur, or spiral gearing so designed that the gear thereof most remote from the crank-shaft may operate a valve of the engine, as above set forth. Patents disclosing common forms of gearing for four-cycle engines comprising two bevel, spur, or spiral gears having a velocity ratio of two to one do not appear as cross-references in any subclass; but claims covering such a device or improvements relating thereto go in this subclass, and patents disclosing trains of gearing other than that above set forth appear herein as cross-references.

Search Class—

74—MACHINE ELEMENTS, subclass 7, Gearing, and the subclasses thereof, according to the type of the device in question.

97. **SPEED-REGULATORS.** Such miscellaneous devices for regulating the speed of internal-combustion engines as do not come within the terms of the definition of the following speed-regulator subclasses.

Note.—The following classification of speed-regulating devices for internal-combustion engines is mainly upon functional lines, and a given structure of governor employed in and forming a part of a speed-regulating device for an internal-combustion engine may be found in any class having machines the speed of which is automatically regulated.

Note.—In searches involving governor structure *per se* without reference to the manner in which such governor acts to control the speed of the engine it should be observed that the devices occurring in all charge-proportion-varying and charge-volume-varying subclasses, almost without exception, either disclose or are intended to be operated by a centrifugal governor or by an inertia-governor, as that term is understood in the high-speed steam-engineering art, so that a search for centrifugal-governor structure would necessarily extend to all such subclasses and to such charge-omitting subclasses as show by their title that a centrifugal governor forms a part of the speed-regulating means occurring therein. On the other hand, inertia-governors, as the term is understood in this art, are seldom found outside of such charge-omitting subclasses as show by their title that an inertia-governor forms a part of the speed-regulating means occurring therein.

Note.—Most, if not all, of the speed-regulating devices occurring in charge-proportion-varying and charge-volume-varying subclasses will, in the limiting position of the speed-regulating means, act to suspend the supply of combustible charges to the working cylinder of the engine, as in charge-omitting subclasses. Where a mere farther movement of the speed-regulating devices occurring in the subclasses above mentioned will act to suspend the supply of combustible charges to the engine, the device is considered as a charge-varying device, rather than as a charge varying and omitting device, and is therefore not classified in a combined type subclass or cross-referenced into charge-omitting subclasses, while in cases where the speed is varied by means of two separate and distinct mechanisms, one operating to vary the charge and the other to suspend the supply of combustible charges, the device is classified in the subclass 101, Speed-regulators, Combined types, Charge varying and omitting.

Note.—Patents disclosing and claiming means for regulating the speed of an internal-combustion engine by suspending the supply of combustible charges thereto, together with means for suspending the operation of the igniting device of the engine during the time that the supply of combustible charges is suspended, are classified and cross-referenced with reference to the speed-regulating and igniting features considered separately, the igniting devices and mechanism cooperating therewith as above being classified in subclass 165, Igniters, Sparkers, Circuit-closers, herein. The ignition of the charge is con-

CLASS 123—Continued.

sidered as being involved in the speed-regulating function of the engine only in cases where the time with reference to the compression or working stroke at which the charge is ignited is automatically varied, and in cases where a combustible charge is supplied to the working cylinder, but not ignited therein.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclasses 43, Adjustable combustion chamber; 123, Charge-forming devices, Governor controlled; 140, Charge-forming devices, Oil feeding, Pumps, Governor controlled.

121—STEAM-ENGINES, subclass 111, Speed-governors, and the subclasses thereunder, for governing devices of general application irrespective of the type of engine on which they are intended to be used.

98. SPEED-REGULATORS, MANUALLY-CONTROLLED.

Speed-regulating devices for internal-combustion engines including an element designed to be operated by the hand or foot of the operator, whereby the speed of the engine may be controlled and generally varied over a considerable range. The devices are ordinarily designed for use with engines adapted to propel a vehicle, and the speed-regulating mechanism as a whole may or may not include means for automatically maintaining a given speed, determined by the position of the manually-operated controlling element. A given speed-regulating mechanism will not be classified in this subclass merely because it fails to disclose the governing means whereby a constant speed of the engine is maintained. Devices evidently designed to automatically maintain a constant speed will be considered as provided with governing means suitable for that purpose. This subclass does not include manually-controlled charge-forming devices. All types of charge-forming devices frequently include adjusting means whereby the mixture may be conveniently varied and the speed of the engine thereby controlled. Such an adjusting means will be considered as a part of the charge-forming device with which it is used.

99. SPEED-REGULATORS, COMBINED TYPES. Excepting such combined types of speed-regulators as come within the terms of the two following subclasses, this subclass is intended to contain patents disclosing and claiming devices for automatically regulating the speed of an internal-combustion engine comprising two or more mechanisms cooperating to regulate the speed thereof, each of which mechanisms considered by itself would come within the terms of some one of the following subclasses of speed-regulators, and speed-regulating devices, whether distinctly compound in structure or not, in which the functions present in the devices occurring in two or more of the following speed-regulator subclasses are carried out.

Note.—Patents disclosing and claiming speed-regulating devices including mechanism which, considered by itself, comes within the terms of the definition of some one of the following speed-regulator subclasses, together with additional mechanism not coming within the terms of some one of those definitions, the two sets of mechanism cooperating to maintain a constant speed of the engine, are classified in the general subclass 97, Speed-regulators.

100. SPEED-REGULATORS, COMBINED TYPES, CHARGE VOLUME AND PROPORTION VARYING. Devices for automatically regulating the speed of internal-combustion engines comprising two separate and distinct speed-regulating means which cooperate to maintain a constant speed of the engine, one of said means acting to vary in any way the volume of the successive combustible charges supplied to the engine and the other to vary the proportion of the constituents forming the said charges, the separate speed-regulating means acting either simultaneously or successively as the speed of the engine increases, and speed-regulating devices in which the constituent elements thereof are so closely associated as to be incapable of separation into two separate and distinct sets of speed-regulating means, but in which the device in question acts to vary both the volume and the proportion of the successive combustible charges.

101. SPEED-REGULATORS, COMBINED TYPES, CHARGE VARYING AND OMITTING. Devices for automatically regulating the speed of internal-combustion engines comprising two separate and distinct speed-regulating means which cooperate to maintain a constant speed of the engine, one of said means acting to vary in any way the volume of the successive charges supplied to the engine or the proportion of the constituents thereof, while the other means acts to suspend the supply of combustible charges to the engine, said separate and distinct means coming into effective operation to carry out the functions enumerated in succession in the order above mentioned as the speed of the engine increases.

102. SPEED-REGULATORS, ELECTRICAL. Speed-regulating devices for internal-combustion engines which depend for their operation upon a current of electricity, such devices acting in any way to automatically control the combustible mixture flowing to the engine, as by varying the volume or composition of said mixture or by suspending the supply thereof to the engine.

Note.—In devices coming within the terms of the above statement a current of electricity is frequently generated by a dynamo operated by the engine the speed of which is to be controlled. In cases where the sole purpose of such dynamo is to supply only so much current as is necessary to the operation of the engine the device as a whole is considered as a speed-regulating means and as such will be classified in this subclass. When, however, the purpose of the engine is to operate a dynamo for supplying a current of electricity for general purposes, the arrangement and cooperation being such that the

CLASS 123—Continued.

speed of the engine is controlled by means dependent for their operation upon the current flowing in the external circuit of the dynamo, the device as a whole is considered as an electric generating plant and is classified in the subclass of 226, Regulators, Engine-control, in class 171, Electricity, Generation.

Note.—For devices for regulating the speed of an internal-combustion engine by controlling the electrical igniting device thereof, see in this class, subclasses 117, Speed-regulators, Automatically-controlled igniting device, and 118, Speed-regulators, Ignition omitting.

Search Classes—

136—STEAM-ENGINE VALVES, subclass 15, Throttle, Electric.
171—ELECTRICITY, GENERATION, subclass 226, Regulators, Engine-control.

103. SPEED-REGULATORS, PNEUMATIC. Speed-regulating devices for internal-combustion engines which depend for their operation upon a fluid, ordinarily air, under pressure either above or below atmospheric pressure, such devices acting in any way to automatically control the combustible mixture flowing to the engine, as by varying the volume or composition of said mixture or by suspending the supply thereof to the engine.

Search Class—

121—STEAM-ENGINES, subclass 114, Speed-governors, Pressure.

104. SPEED-REGULATORS, SUPPLY-PUMP REGULATING. Speed-regulating devices for such internal-combustion engines as include a pump for supplying a combustible mixture or one or both the constituents thereof to the working cylinder, comprising automatically-regulated controlling means acting upon the said supply-pump, the regulating means acting upon the pump in any way, as by determining the volume of combustible mixture or of one of its constituents supplied by the pump to the working cylinder of the engine, the proportion of the constituents of the said mixture, or by temporarily suspending the effective operation of the supply-pump.

Search Class—

123—INTERNAL COMBUSTION ENGINES, subclass 140, Charge-forming devices, Oil-feeding, Pumps, Governor-controlled.

105. SPEED-REGULATORS, CHARGE-REJECTING. Devices for regulating the speed of internal-combustion engines comprising automatically-controlled means for permitting a part only or the whole of a complete combustible charge previously admitted to the working cylinder of the engine to be rejected therefrom during the early part or throughout the whole of the compression-stroke of the working piston, the remainder of the charge, in the first case stated, being then compressed and ignited, whereby, in the first case, variable volumes of combustible charge, ordinarily of constant proportion, are compressed and ignited upon each working stroke of the engine, and, in the second case, impulses due to the ignition of a combustible charge within the working cylinder of the engine are suspended when the speed of the engine is too great. The portion of the charge rejected from the working cylinder is ordinarily forced back into the supply reservoir or conduit either through the regular supply passage and past the supply-valve of the engine or through an auxiliary valve-controlled passage.

106. SPEED-REGULATORS, CHARGE-PROPORTION VARYING. Devices for regulating the speed of internal-combustion engines by automatically varying the proportion of air and combustible forming the successive charges supplied to and burned within the working cylinder of the engine, the volume of such successive charges remaining constant and the pressure thereof being always at or substantially at atmospheric pressure at the beginning of the compression-stroke. Speed-regulating devices for internal-combustion engines are considered as coming within this definition in cases where the amount of combustible in the successive charges at constant volume and at atmospheric pressure is automatically varied by the said speed-regulating device, and among the ways in which the said proportion may be varied are (1) by directly controlling the flow of both the air and combustible to the engine by suitable valves located in the respective supply-conduits and operating to throttle the supply of one of the constituents while opening a more free passage for the other, and (2) by throttling the supply of either constituent, generally of the combustible, by a suitable valve located in the supply-conduit thereof, the supply of the other constituent being uncontrolled, and (3) by supplying variable and regulated quantities of a mixture of air and hydrocarbon to the working cylinder of the engine, which mixture, together with such an additional amount of fluid as is necessary to fill the working cylinder at atmospheric pressure, forms the successive charges.

Note.—A given regulating device which might be used to control one of the constituents of the combustible charge in a speed-regulating device properly classifiable in this subclass might be used to control the whole charge in devices occurring in the following charge-volume-varying subclasses. Search should therefore be continued in appropriate charge-volume-varying subclasses.

Search Class—

123—INTERNAL COMBUSTION ENGINES, subclass 100, Speed-regulators, Combined types, Charge volume and proportion varying.

107. SPEED-REGULATORS, CHARGE-PROPORTION VARYING, EXHAUST-REGULATING. Devices for regulating the speed of internal-combustion engines by automatically varying the proportion of air and combustible forming the successive charges supplied to and burned within the working cylinder of the engine, in which each successive charge is com-

CLASS 123—Continued.

posed of a portion of the burned gases from the preceding charge, together with a quantity of fresh mixture of air and combustible sufficient in amount to fill the working cylinder and clearance-space, so that the successive charges are of constant volume and at or substantially at atmospheric pressure at the beginning of the compression-stroke. Among the ways in which the amounts of burned gases and mixture of air and combustible which together form the successive charges may be varied, thereby varying the quantity of combustible in the gases constituting the whole charge, are (1) by throttling the supply of the mixture during the suction-stroke of the engine, the exhaust-valve being free to open when the pressure within the working cylinder falls below atmospheric pressure, and (2) by permitting a part only of the burned gases to escape from the working cylinder, the space thus vacated being filled with fresh mixture upon the following suction-stroke, and (3) by holding the exhaust-valve open during a part of the suction-stroke, whereby exhaust-gases are drawn back into the working cylinder during a part of the suction-stroke, the mixture entering after the exhaust-valve closes.

108. **SPEED-REGULATORS, CHARGE-VOLUME VARYING, THROTTLING.** Devices for regulating the speed of internal-combustion engines by varying the volume at constant pressure of the successive charges supplied to and burned within the working cylinder, the proportion of the constituents of such charge remaining constant and the flow thereof into the working cylinder continuing throughout the whole of the charging stroke of the working piston, comprising an automatically-controlled throttle valve or valves located in the supply-conduit for the mixture or in the supply-conduits for both the constituents thereof and operating to throttle or obstruct the flow of the mixture to the engine or of both the constituents of such mixture to a mixing chamber communicating with the engine, whereby variable volumes of combustible mixture to form the successive charges are permitted to enter the working cylinder of the engine. In devices having, in effect, two valves for throttling the supply-conduits for both the air and combustible the valves are ordinarily so associated as to form but a single valve structure controlling the flow of both the constituents of the charge to a mixing-chamber adjacent the said valve, from which chamber the mixture flows to the engine.

Note.—The term "throttling" is used in this subclass to define a definite mechanical structure rather than a function, and the combustible mixture is subjected to a throttling action in all of the devices occurring in the subclass of 109, Speed-regulators, Charge-volume varying, Supply-valve-lift regulating, below, and the combustible mixture, or both the constituents thereof, is subjected to a throttling action in many of the devices occurring in the subclass 110, Speed-regulators, Charge-volume varying, Automatic cut-off, below.

Note.—In addition to the field of search indicated in the definition of the subclass 97, Speed-regulators, see also subclass 106 Speed-regulators, Charge-proportion varying, for throttling devices adapted to control the flow of one only of the constituents of the combustible charge.

Search Class—

123 INTERNAL COMBUSTION ENGINES, subclass 100, Speed-regulators, Combined types, Charge volume and proportion varying, and 121, STEAM-ENGINES, subclass 112, Speed-governors, Centrifugal.

109. **SPEED-REGULATORS, CHARGE-VOLUME VARYING, SUPPLY-VALVE-LIFT REGULATING.** Devices for regulating the speed of internal-combustion engines by varying the volume at constant pressure of the successive charges supplied to and burned within the working cylinder thereof, the proportion of the constituents of such charge remaining constant, comprising automatically controlled means for limiting the degree of opening or lift of the main supply-valve of the engine upon the charging stroke of the working piston, the said valve being opened by suction and the supply of combustible mixture continuing throughout the whole of the charging stroke. The supply-valve in the devices occurring in this subclass is always suction-operated.

Note.—For devices differing from those in this subclass only in that a like valve is operated positively from a moving part of the engine and in unison with the charging stroke of the working piston, see subclass 110, Speed-regulators, Charge-volume-varying, Automatic cut-off, below.

Search Class—

123—INTERNAL COMBUSTION ENGINES, subclass 100, Speed-regulators, Combined types, Charge volume and proportion varying.

110. **SPEED-REGULATORS, CHARGE-VOLUME VARYING, AUTOMATIC CUT-OFF.** Devices for regulating the speed of an internal-combustion engine by varying the volume at constant pressure of the successive charges supplied to and burned within the working cylinder, the proportion of the constituents of such charge remaining constant, comprising a valve or valves for controlling the flow of the combustible mixture or of both the constituents thereof, and operated from a moving part of the engine and in unison with the charging stroke of the working piston, together with automatically-controlled means acting upon the said valve or valves and operating to open the same during variable portions of the successive charging strokes, or to open said valve or valves to a variable degree during the whole of the successive charging strokes, whereby variable volumes of combustible mixture to form the successive charges are permitted to enter the working cylinder of the engine. The positively-operated valve whereby the volume of the successive charges is varied as above may be either the main supply-valve of the engine or an auxiliary valve located in the main supply-conduit through

CLASS 123—Continued.

which the mixture flows to the engine. In cases where two valves are employed they commonly control the flow of air and combustible to a mixing-chamber separated from the working cylinder by the main supply-valve of the engine.

Search Class—

123—INTERNAL COMBUSTION ENGINES, subclass 100, Speed-regulators, Combined types, Charge volume and proportion varying.

111. **SPEED-REGULATORS, CHARGE-OMITTING, CENTRIFUGAL GOVERNOR, SUPPLY AND EXHAUST VALVE REGULATING.** Devices for regulating the speed of internal-combustion engines by suspending the supply of combustible charges to the working cylinder thereof when the engine runs too fast, comprising automatically-controlled means acting to interrupt the operation of a valve concerned with the supply of combustible mixture to the engine and also to interrupt the operation of the exhaust-valve, said means including a centrifugal governor. The valve concerned with the supply of combustible mixture to the engine may be either the main inlet-valve controlling the supply of mixture to the engine or an auxiliary valve located in and controlling the supply-conduit for the combustible charge, or a valve controlling the supply of the combustible constituent only of the charge either directly to the working cylinder or to a mixing-chamber in communication therewith.

Note.—For other examples of speed-regulating devices which govern by suspending the supply of combustible mixture to the engine, see in this class subclasses 101, Speed-regulators, Combined types, Charge varying and omitting; 102, Speed-regulators, Electrical, and 103, Speed-regulators, Pneumatic.

Note.—A search for a governing means *per se* dependent for its operation upon centrifugal force, but irrespective of the way in which such governor acts to control the speed of the engine, should be continued as indicated in the definition of the subclass 97, Speed-regulators, in this class.

112. **SPEED-REGULATORS, CHARGE-OMITTING, CENTRIFUGAL GOVERNOR, SUPPLY-VALVE REGULATING.** Speed-regulating devices differing from those defined in the preceding definition in that the centrifugal governor acts to interrupt the operation of a valve concerned with the supply of combustible mixture to the engine.

113. **SPEED-REGULATORS, CHARGE-OMITTING, CENTRIFUGAL GOVERNOR, EXHAUST-VALVE REGULATING.** Speed-regulating devices differing from those defined in the preceding definition in that the centrifugal governor acts to interrupt the operation of the exhaust-valve of the engine.

114. **SPEED - REGULATORS, CHARGE - OMITTING, INERTIA - GOVERNOR, SUPPLY AND EXHAUST VALVE REGULATING.** Speed-regulating devices differing from those defined in the definition of subclass 111 above in that the speed-regulating function is carried out by means including an inertia-governor.

115. **SPEED - REGULATORS, CHARGE - OMITTING, INERTIA - GOVERNOR, SUPPLY - VALVE REGULATING.** Speed-regulating devices differing from those defined in the definition of subclass 114 in that the inertia-governor acts to interrupt the operation of a valve concerned with the supply of combustible mixture to the engine.

116. **SPEED - REGULATORS, CHARGE - OMITTING, INERTIA-GOVERNOR, EXHAUST-VALVE REGULATING.** Speed-regulating devices differing from those defined in the preceding definition in that the inertia-governor acts to interrupt the operation of the exhaust-valve of the engine.

117. **SPEED - REGULATORS, AUTOMATICALLY - CONTROLLED IGNITING DEVICE.** Devices for regulating the speed of internal-combustion engines comprising means for automatically varying the time in the cycle of operation of the engine at which the combustible charge in the working cylinder is ignited. Includes devices for retarding or delaying the ignition of the combustible charge, so that ignition will take place after the beginning of the working stroke, and also devices for advancing or making earlier the time of ignition of the combustible charge, so that ignition will take place before the end of the compression-stroke, the means whereby the ignition is retarded or advanced being automatically controlled in either case.

Note.—For engines in which the combustible charge is supplied to the working cylinder under pressure for a variable time after the beginning of the working stroke, the combustible charge being ignited simultaneously with the termination of the supply thereof, see subclass 68, Two-cycle, Pump compression, and 61, Double-acting, Two-cycle, both in this class.

Note.—For means operated by the speed-regulating device of the engine for interrupting the operation of the igniting device while the supply of combustible charges to the engine is suspended, see in this class, subclass 165, Igniters, Sparkers, Circuit-closers.

Note.—For governor-controlled igniting devices in which the ignition of a combustible charge within the working cylinder is interrupted, see the following subclass.

Note.—For manually-operated adjusting means designed for use with electrical igniting devices for determining the time with reference to the compression or working stroke at which the charge is ignited, see in this class, subclasses 164, Igniters, Sparkers, Make-and-break, Adjusting mechanism; 166, Igniters, Sparkers, Circuit-closers, Single circuit; 167, Igniters, Sparkers, Circuit-closers, Multiple circuit; and 168, Igniters, Sparkers, Circuit-closers, Primary and secondary control.

CLASS 123—Continued.

- 118. SPEED-REGULATORS, IGNITION-OMITTING.** Devices for regulating the speed of internal-combustion engines by automatically interrupting the operation of the igniting device when the engine runs too fast. In the devices occurring in this subclass a combustible charge is always supplied to the working cylinder of the engine and is in condition to be ignited therein when the operation of the igniting device is interrupted. The unignited charge thus present in the working cylinder during the working stroke may be discharged therefrom during the following exhaust-stroke, or the construction of the valve-operating mechanism of the engine may be such that the exhaust-valve is not opened unless a charge has been ignited upon the preceding working stroke.

Note.—Speed-regulating devices of the type occurring in this subclass are ordinarily disclosed in connection with such valve-operating mechanisms as occur in subclass 92, Valve-operating mechanism, Four-cycle, Pneumatic, in this class.

Note.—This subclass does not include devices in which the speed of an internal-combustion engine is regulated by means operating to suspend the supply of combustible charges thereto and in which the operation of the igniting device is interrupted while such speed-regulating means is acting to reduce the speed of the engine. For the treatment of such cases see the definition of subclass 97, Speed-regulators. That portion of the device in question that relates to the means whereby the governor acts upon the igniting device to produce the result set forth is classified in subclass 165, Igniters, Sparkers, Circuit-closers, in this class.

Note.—For governor-controlled igniting devices in which the time at which the charge is ignited is varied, see subclass 117, Speed-regulators, Automatically-controlled igniting device.

- 119. CHARGE-FORMING DEVICES.** Such miscellaneous devices relating to the production of a mixture of air and hydrocarbon without the working cylinder of an internal-combustion engine and with the supply of such mixture to the engine as do not come within the terms of the definitions of the following subclasses of charge-forming devices. The subclasses of charge-forming devices for internal-combustion engines include (1) subordinate devices concerned with the production of a mixture of air and hydrocarbon to be supplied to and burned within an internal-combustion engine and with the supply of such mixture thereto, the device in question being designed for use with such a mixture-producing device and incapable of use in the manner contemplated in other relations or with other devices, and (2) devices including a pump designed and especially adapted for use with an internal-combustion engine for the purpose of supplying a liquid hydrocarbon either directly to the working cylinder thereof to be vaporized and burned therein or to a mixture-producing device separate from the engine and designed to supply a mixture of air and hydrocarbon thereto, and (3) devices designed and especially adapted for use with an internal-combustion engine and depending for their operation upon the continued operation thereof for producing a homogeneous mixture of air and gas to be supplied to and burned within the engine, and (4) devices designed and especially adapted for use with an internal-combustion engine for the purpose of producing a combustible mixture from a liquid hydrocarbon and air to be supplied to and burned within the engine or for producing the combustible constituent of such a mixture, the operation of such device being dependent upon suction produced by the working piston of the engine or by the supply-pump therefor, and which devices would not operate in the manner contemplated to produce any considerable amount of combustible mixture or of the combustible constituent thereof except when the engine was in operation. The devices are invariably intermittent in their action and operate to produce the quantity of combustible mixture as above necessary for the successive combustible charges stroke by stroke as the engine continues in operation, the combustible mixture being conveyed directly to the working cylinder of the engine and burned therein without preliminary storage.

Note.—The devices in charge-forming device subclasses being specific devices designed and adapted for use only in connection with an internal-combustion engine, but the function of which, broadly considered, is to produce a combustible gas, a search will need to be continued in class 48, Gas, HEATING AND ILLUMINATING, or not, according as the invention in question is broadly or specifically considered.

- 120. CHARGE-FORMING DEVICES, GAS AND AIR MIXERS.** Charge-forming devices designed to produce a homogeneous mixture of air and a combustible gas, as distinguished from a mixture of air and a liquid hydrocarbon, to be supplied to and burned within the working cylinder of an internal-combustion engine, such device depending upon the engine with which it is used for its operation and being incapable of use in the manner contemplated except in connection with an internal-combustion engine.

Note.—For gas and air mixing devices of general application, see in class 48, Gas, HEATING AND ILLUMINATING, subclass 180, Mixers, and the subclasses thereunder.

Note.—Also for like devices used in connection with a heating-burner, see in class 158, LIQUID AND GASEOUS FUEL BURNERS, subclasses 118, Gas and air mixers, and 119, Gas and air mixers, Proportional.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclass 108, Speed-regulators, Charge-volume varying, Throttling.

- 121. CHARGE-FORMING DEVICES, COMBINED OIL AND GAS.** Charge-forming devices designed to produce a combustible mixture from a liquid hydrocarbon and air or from a combustible gas and air, whereby the engine supplied with combustible mixture by such charge-forming device may be

CLASS 123—Continued.

operated either with a liquid hydrocarbon or with a combustible gas as interchangeable sources of power and may ordinarily be operated by a combustible mixture formed from air and both a liquid hydrocarbon and a combustible gas by properly regulating the controlling-valves ordinarily present in the oil and gas supply conduits.

- 122. CHARGE-FORMING DEVICES, HEATING.** Charge-forming devices other than those in which oil is evaporated to furnish the combustible constituent of the charge, as in oil-evaporating subclasses below, but otherwise irrespective of structural features or mode of operation, in which the invention relates to or includes means for heating the charge-forming device or a part thereof, or for heating one or both of the constituents of the combustible mixture, or for heating the combustible mixture prior to its entry into the engine.

Note.—In a search involving the idea of heating the combustible mixture or one of its constituents it should be observed that all devices classified in the following oil-evaporating subclasses necessarily depend upon heat for their operation and that specific heating means ordinarily form a part of the engines classified in the preceding oil-engine subclasses.

Search Classes—

48—GAS, HEATING AND ILLUMINATING, subclass 148, Carburizers, Heaters.

123—INTERNAL-COMBUSTION ENGINES, subclasses 34, Oil-engines, External-vaporizing; 35, Oil-engines, External vaporizing, Four-cycle; 68, Two-cycle, Pump compression; and 133, Charge-forming devices, Oil-evaporating, and the subclasses thereunder.

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 58, Burners, Liquid-fuel, Retort, Additional carburetor.

- 123. CHARGE-FORMING DEVICES, GOVERNOR-CONTROLLED.** Charge-forming devices irrespective of structural features or mode of operation having in addition to the elements concerned with the production of the combustible mixture means for automatically controlling the mixture produced, and thus regulating the speed of the engine with which the charge-forming device is used, the elements concerned with the production of the combustible mixture being so intimately associated with the means whereby the speed of the engine is regulated that mechanical separation of the two sets of elements would be impossible without destroying the identity of the device as a whole and defeating its operation in the manner contemplated by the inventor. In all types of charge-forming devices one or more of the constituents of the combustible charge is generally, if not invariably, controllable, as by a suitable valve, and a mere statement that such a controlling means may be regulated by an automatic governor is not in itself sufficient to cause the device in question to be classified in this subclass. Patents disclosing both a charge-forming device and a speed-regulating device, even though such devices be closely associated, but in which the elements forming one of the devices do not modify or affect the operation of the elements forming the other and in which each device might be used alone or with other forms of the other device, are not classified in this subclass, but in appropriate subclasses of charge-forming devices and of speed-regulators.

Note.—A search for an automatically-controlled charge-forming device should be continued in appropriate subclasses of charge-forming devices having devices like the one in question without the speed-regulating features and in appropriate subclasses of speed-regulators for the speed-regulating features without reference to the charge-forming device.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclasses 30, Oil-engines, Internal-vaporizing; 31, Oil-engines, Internal-vaporizing, Four-cycle; 34, Oil-engines, External-vaporizing; and 35, Oil-engines, External-vaporizing, Four-cycle.

- 124. CHARGE-FORMING DEVICES, AUTOMATIC DILUTION.** Charge-forming devices having means for producing a combustible mixture from a liquid hydrocarbon and air and also automatically-acting means dependent for its operation upon an increase in the speed of the engine with which the device is used, said means acting to admit an additional quantity of air at high speeds of the engine, whereby a more uniform mixture is produced. The purpose of the devices in this subclass is to produce a mixture in which the proportion of air and hydrocarbon will be substantially constant at all speeds of the engine. This is accomplished by counteracting the effect of an increased supply of oil, due to the greater suction effect produced by the more rapid flow of the air through the charge-forming device at high speeds of the engine, by admitting at such times an additional quantity of air to the charge-forming device, thereby reducing the proportion of hydrocarbon in the mixture, which would otherwise be richer in hydrocarbon than is desirable. They are frequently described as devices for facilitating the starting of internal-combustion engines, and they differ from such governor-controlled charge-forming devices as vary the mixture produced in that the diluting-valve opens at a given and generally comparatively low speed of the engine and remains in that condition whatever speed the engine may ultimately attain, while a similar valve of a governor-controlled charge-forming device would be moved with every change of speed of the engine with which it is used.

Search Class—

48—GAS, HEATING AND ILLUMINATING, subclass 155.2, Carburizers, Atomizers, Constant level, Automatic dilution.

- 125. CHARGE-FORMING DEVICES, OIL-INTERCEPTING.** Charge-forming devices including an intercepting member and means for supplying oil thereto and means whereby a current of air is caused to flow past the said intercepting member, whereby oil supplied to the intercepting member is inter-

CLASS 123—Continued.

cepted and held thereby until vaporized or atomized by the current of air as it flows by the said member.

Note.—The intercepting members in the devices occurring in this subclass are frequently in the form of perforated screens, through which the air passes. This subclass does not, however, include screens or equivalent devices located between the point where the mixture is formed and the engine and through which the mixture passes, the principal function of which is to break up the particles of oil and secure a more thorough mixing of air and hydrocarbon, although in such devices the screens are sometimes described as having the further function of intercepting the particles of oil and holding them until vaporization takes place. Such devices, if claimed by themselves, are classified in subclass 141, Charge-forming devices, Mixing devices; but they are frequently disclosed with all types of charge-forming devices.

126. **CHARGE-FORMING DEVICES, MOVABLE CARRIER.** Charge-forming devices including among their elements a movable member and means dependent for its operation upon the engine with which the device is used for operating the movable member, said movable member being designed to engage with and to distribute the oil in such a manner or to carry the oil into such a position that its vaporization is the more readily accomplished.

Search Class—

48—GAS, HEATING AND ILLUMINATING, subclass 165, Carbureters, Pivoted, Revolving.

127. **CHARGE-FORMING DEVICES, MULTIPLE OIL-SUPPLY.** Charge-forming devices having a plurality of means for supplying oil to the air as it passes therethrough, the oil being either all of one quality or of different qualities, whereby, in the first case, varying quantities of oil may be supplied to the engine with which the charge-forming device is used, and, in the second case, the engine may be operated with different qualities or kinds of oil or equivalent fuel.

128. **CHARGE-FORMING DEVICES, CONSTANT OIL-SUPPLY.** Charge-forming devices in which a continuous stream of oil is caused to pass across the air-supply conduit or through a portion of such conduit, whereby the air as it passes by the stream of oil will atomize or vaporize a portion thereof. The flow of air being intermittent, while the flow of oil is continuous and generally in excess of the quantity which can be taken up by the air as it passes to the engine, the devices in this subclass are always provided with draining means for conducting the surplus oil from the charge-forming device.

Search Class—

123—INTERNAL COMBUSTION ENGINES, subclass 125, Charge-forming devices, Oil-intercepting, for devices resembling those in this subclass, but with the additional feature that the oil as it passes through the air-supply conduit flows over a perforated screen; subclass 135, Charge-forming devices, Oil-evaporating, Extended oil-film, for devices designed to vaporize the less volatile hydrocarbon oils and in which no atomizing action is possible, but which otherwise resemble somewhat those occurring in this subclass.

129. **CHARGE-FORMING DEVICES, VALVE-CONTROLLED OIL.** Charge-forming devices provided with a chamber in which air and oil are mingled to form a combustible mixture, the oil-supply conduit being provided with a valve for arresting the flow of oil into the mixing-chamber during the intervals in the cycle of operation of the engine that a combustible mixture is not required thereby, the operation of such valve depending upon suction produced by the working piston of the engine or by the piston of a pump for supplying combustible mixture thereto. The valve above mentioned is ordinarily located at the discharge end of the oil-supply conduit, and the air-supply conduit to the mixing-chamber is frequently also controlled by a valve depending for its operation upon suction.

Search Class—

48—GAS, HEATING AND ILLUMINATING, subclass 154.1, Carbureters, Oil-feed, Suction-controlled valve.

130. **CHARGE-FORMING DEVICES, VALVE-CONTROLLED OIL, POSITIVELY-OPERATED.** Charge-forming devices differing from those occurring in the preceding subclass in that the valve controlling the oil-supply conduit instead of depending upon suction for its operation is positively operated by and in unison with the engine with which the charge-forming device in question is used.

131. **CHARGE-FORMING DEVICES, ATOMIZERS.** Charge-forming devices in which air is caused to flow in a more or less confined stream and at high velocity past the discharge end of a permanently-open oil-supply conduit, whereby the oil is entrained and atomized or sprayed, the resulting combustible mixture being composed of air and oil gasified or vaporized in part and in part suspended in the liquid form. The subclasses of atomizing charge-forming devices are intended to be structural rather than functional, and it should be observed that there is more or less of an atomizing action present in the devices occurring in all charge-forming-device subclasses excepting the following oil-evaporating subclasses, the subclass of gas and air mixers, and the oil-feeding and other elemental subclasses. In oil-atomizing charge-forming devices the air for atomizing the oil is generally caused to flow past the discharge end of the oil-supply conduit intermittently by suction produced by the working piston of the engine with which the device is used or by the piston of a supply-pump therefor upon the charging stroke of such piston, although in some devices the oil is atomized by air under pressure, in which case the operation of the atomizing device may be continuous.

CLASS 123—Continued.

Search Class—

48—GAS, HEATING AND ILLUMINATING, subclass 155, Carbureters, Atomizers, for devices for producing a gas for heating or illuminating purposes which atomize a liquid hydrocarbon by means of air under pressure.

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 73, Burners, Liquid-fuel, Spray, and the subclasses thereunder, for atomizing devices used in connection with a heating-burner and depending for their operation upon air under pressure.

132. **CHARGE-FORMING DEVICES, ATOMIZERS, CONSTANT-LEVEL.** Charge-forming devices which atomize or spray the oil, as in the preceding subclass, and which have in addition to the atomizing elements means for maintaining the oil at a constant height with reference to the discharge end of the oil-supply conduit, generally at or slightly below the level of such discharge end.

Note.—A search in which the means whereby the oil is maintained at a constant level is involved should be continued in class 158, LIQUID AND GASEOUS FUEL BURNERS, subclass 37, Burners, Liquid-fuel, Fuel-feeding, Maintained Oil-level, and the subclasses thereunder, and in class 48, GAS, HEATING AND ILLUMINATING, subclasses 155.1, Carbureters, Atomizers, Constant level, and 155.2, Carbureters, Atomizers, Constant level, Automatic dilution.

133. **CHARGE-FORMING DEVICES, OIL-EVAPORATING.** Charge-forming devices not classified in the following oil-evaporating subclasses, in which a liquid hydrocarbon is evaporated to furnish the combustible constituent of the charge. The action of the charge-forming devices in this and the two following subclasses is always an evaporating action, as distinguished from an atomizing action generally present in most charge-forming devices for internal-combustion engines, although in such devices the minute particles of oil are ordinarily vaporized after atomization and before the mixture reaches the engines. In oil-evaporating devices evaporation ordinarily takes place from the surface of a considerable volume of oil or from the surface of an absorbent material communicating with and kept in a saturated condition by the oil, and such devices always require heat for their operation, the heat being frequently derived from the surrounding atmosphere and the air used to form the charge in devices in which the more volatile hydrocarbon oils are used and from an auxiliary heating device when less volatile oils are used.

Note.—For devices for producing a gas for heating or illuminating purposes by evaporating a liquid hydrocarbon and mixing the resulting vapor with air, see in this class, subclasses 34, Oil-engines, External-vaporizing, and 35, Oil-engines, External-vaporizing, Four-cycle; also in class 48, GAS, HEATING AND ILLUMINATING, subclass 156, Carbureters, Capillary, and the subclasses thereunder; subclasses 168, Carbureters, Surface; 169, Carbureters, Surface, Float; 102, Generators, Retort, Oil, and the subclasses thereunder, and 211, Processes, Oil, and the subclasses thereunder.

134. **CHARGE-FORMING DEVICES, OIL-EVAPORATING, SUBMERGED AIR-SUPPLY.** Oil-evaporating charge-forming devices in which the air-supply conduit extends below the surface of the oil to be evaporated, whereby air is supplied to the body of the oil below the surface thereof and rises in bubbles therethrough, vaporizing a portion of the oil and forming a combustible mixture with the vapor.

Note.—For devices for producing a gas for heating or illuminating purposes similar in structure and mode of operation to those in this subclass, see in class 48, GAS, HEATING AND ILLUMINATING, subclasses 166, Carbureters, Submerged-blast, and 167, Carbureters, Submerged-blast, Coil.

135. **CHARGE-FORMING DEVICES, OIL-EVAPORATING, EXTENDED OIL-FILM.** Oil-evaporating charge-forming devices in which the interior of the chamber in which the oil is evaporated is provided with an extended stationary surface, generally in the form of shelves, trays, plates, or similar devices, to which surface oil is supplied and over which it extends or spreads in a thin film of large extent, whereby evaporation of the oil from the extended surface is facilitated. The devices are ordinarily designed to vaporize the less volatile hydrocarbon oils, crude petroleum frequently being the oil employed to furnish the combustible constituent of the charge. The vaporizing devices are always provided with heating means, the exhaust-gases from the engines with which the device is used or a portion of such gases being ordinarily employed for such purpose. The oil is ordinarily supplied to the extended evaporating surface in a constant stream, and the flow thereof is generally independent of the operation of the engines with which the charge-forming device is used.

Note.—Search as indicated in subclass 133, Charge-forming devices, Oil-evaporating, above.

136. **CHARGE-FORMING DEVICES, OIL-FEEDING.** Devices not coming within the terms of the definition of some one of the following oil-feeding subclasses for supplying a charge-forming device with oil or equivalent fuel or for supplying oil or equivalent fuel directly to the working cylinder or combustion-chamber of an internal-combustion engine when a separate charge-forming device is not used therewith and devices designed for use with a charge-forming device or internal-combustion engine and relating to the supply of oil or equivalent fuel thereto, the feeding device in question having features of construction or peculiarities in mode of operation particularly adapting it for use with internal-combustion engines for the purpose of supplying oil thereto and rendering its use in other relations or with other devices impossible, or at least unlikely.

CLASS 123—Continued.

Note.—Oil-feeding devices of general application designed to supply or control the flow of a hydrocarbon oil to any device in which such oil is to be consumed, as to a lamp, heating-burner, or like device, are classified in class 158, LIQUID AND GASEOUS FUEL BURNERS, subclass 36, Burners, Liquid-fuel, Fuel-feeding, and the subclasses thereunder, which subclasses should be searched for devices in which the means for supplying oil to charge-forming devices are involved. As all charge-forming devices necessarily include some means for supplying oil thereto a search for means adapted for that purpose may extend to all subclasses of charge-forming devices.

Search Classes—

48—GAS, HEATING AND ILLUMINATING, subclass 150, Carbureters, Oil-feed, and the subclasses thereunder.

184—LUBRICATION, which class contains devices for feeding oil for lubricating purposes similar in structure and operation to many of the devices in this subclass.

137. CHARGE-FORMING DEVICES, OIL-FEEDING, RECIPROCATING. Oil-feeding devices comprising a reciprocating feeding member positively operated by the engine with which it is used and having a chamber designed to receive and to transfer oil from a source of supply to a charge-forming device or internal-combustion engine, said chamber being brought by the reciprocation of the feeding member alternately into communication with the source of oil and with the device to which the oil is to be supplied, whereby definite quantities of oil are supplied to the charge-forming device or internal-combustion engine with which the oil-feeding device is used.

138. CHARGE-FORMING DEVICES, OIL-FEEDING, ROTARY. Oil-feeding devices differing from those defined in the preceding definition in that the oil-feeding member partakes of a rotary or of an oscillatory motion.

139. CHARGE-FORMING DEVICES, OIL-FEEDING, PUMPS. Pumps and accessories thereto for supplying a charge-forming device with oil or for supplying oil directly to the working cylinder or combustion-chamber of an internal-combustion engine when a separate charge-forming device is not used therewith, the pump being operated by and in unison with the engine with which it or the charge-forming device which it supplies with oil is used.

Note.—The devices occurring in the class 103, PUMPS, are generally not available without considerable modification for the purpose of supplying oil to internal-combustion engines, although claims relating to a pump properly classifiable in this subclass might be presented in such a form as to necessitate a search in that class.

Search Classes—

123—INTERNAL-COMBUSTION ENGINES, subclasses 28, Oil-engines, Pump-supply to air-inlet, Four-cycle; 29, Oil-engines, Pump-supply to air-inlet, Two-cycle; 32, Oil-engines, Internal-vaporizing, Forced oil-supply; 33, Oil-engines, Internal-vaporizing, Forced oil-supply, Oil-atomizing; and 140, Charge-forming Devices, Oil-feeding, Pumps, Governor-controlled.

48—GAS, HEATING AND ILLUMINATING, subclass 152, Carbureters, Oil-feed, Pump.

184—LUBRICATION.

140. CHARGE-FORMING DEVICES, OIL-FEEDING, PUMPS, GOVERNOR-CONTROLLED. Devices like those in the preceding subclass, but with the additional feature that the operation of the pump is automatically controlled by a suitable governing device, whereby the quantity of oil supplied to the charge-forming device or to the engine is automatically controlled.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclasses 28, Oil-engines, Pump-supply to air-inlet, Four-cycle; 29, Oil-engines, Pump-supply to air-inlet, Two-cycle; 32, Oil-engines, Internal-vaporizing, Forced oil-supply; 33, Oil-engines, Internal-vaporizing, Forced oil-supply, Oil-atomizing; 97, Speed-regulators, and the subclasses thereunder, for the speed-regulating features without reference to the pump controlled thereby.

48—GAS, HEATING AND ILLUMINATING, subclass 152, Carbureters, Oil-feed, Pump.

184—LUBRICATION.

141. CHARGE-FORMING DEVICES, MIXING DEVICES. Devices concerned with the production of a combustible mixture and its supply to an internal-combustion engine to be burned therein and located between the point where the air and hydrocarbon are first mixed and the engine, such device being designed to more thoroughly commingle a mixture of air and hydrocarbon produced by a charge-forming device of any type to thereby produce a more uniform and homogeneous mixture. The devices in this subclass are commonly shown in connection with some specific type of charge-forming device, although the mixing device is ordinarily independent of the means whereby the initial mixture is produced and is ordinarily capable of use to more thoroughly mix the mixture of air and hydrocarbon produced by any type of charge-forming device.

Note.—It should be observed that as all charge-forming devices are designed to produce a mixture of air and hydrocarbon and as the intimacy or completeness of such mixture necessarily depends to some extent upon the construction of the charge-forming device, a search for a device described as a mixing device of general application, but, in fact, involving the structure of a charge-forming device, may sometimes extend to and include all subclasses of charge-forming devices.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclass 142, Charge-forming devices, Safety devices.

CLASS 123—Continued.

142. CHARGE-FORMING DEVICES, SAFETY DEVICES. Devices used in connection with charge-forming devices for the purpose of preventing the ignition of the combustible mixture therein and devices for the purpose of preventing injury to the charge-forming device or interference with its operation in case the combustible mixture therein should become ignited.

Search Classes—

123—INTERNAL-COMBUSTION ENGINES, subclass 141, Charge-forming devices, Mixing devices.

48—GAS, HEATING AND ILLUMINATING, subclass 192, Distribution, Safety devices.

143. IGNITERS, MISCELLANEOUS. Miscellaneous devices not coming within the terms of the definitions of the following subclasses of igniters for igniting the successive combustible charges supplied to and burned within an internal-combustion engine.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclass 184, Starting devices, Igniters, for devices for igniting the charge within the working cylinder at starting and designed for temporary use at such times.

144. IGNITERS, FLAME. Igniting devices for internal-combustion engines comprising a burner located without the working cylinder and means for igniting the combustible charge in the working cylinder from the flame of the burner either by causing the flame itself to come into direct contact with the combustible charge within the working cylinder or by causing the flame to ignite an auxiliary volume of combustible gas, which burning gas is then moved into direct contact with the combustible charge within the working cylinder. Also contains patents in which a flame-igniting device as above defined is disclosed and claimed in combination with the supply or exhaust valve of the engine or with a valve controlling both the supply and exhaust ports. Flame-igniting devices capable of use only with internal-combustion engines operating upon non-compression cycles are, when disclosed or claimed in patents claiming also a complete non-compression engine, considered as a part of such an engine and are not cross-referenced into this subclass.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclass 39, Non-compression.

145. IGNITERS, INCANDESCENT. Igniting devices for internal-combustion engines comprising an igniting member maintained at a temperature sufficient to ignite the combustible mixture when it comes into contact therewith and heating means for maintaining such igniting member at a high temperature, generally at incandescence, whereby the combustible charge will be ignited upon coming into contact with the igniting member.

NOTE.—The igniting member may extend without the working cylinder or combustion-chamber of the engine, in which case it is generally maintained at a high temperature by means of an external heating-burner, which might be of any one of the types of heating-burners occurring generally throughout the class of 158, LIQUID AND GASEOUS FUEL BURNERS, or the said igniting member may be located wholly within the working cylinder or combustion-chamber, in which case it is ordinarily maintained in a heated condition by the burning gases within the engine. The heating means for the igniting device ordinarily forms no part of the igniting device itself; but such burners as are especially designed for and adapted to be used with an incandescent igniting device and are disclosed in connection with such a device are classified in this subclass.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclasses 30, Oil-engines, Internal-vaporizing, and the subclasses thereunder, and 146, Igniters, Incandescent, Valve-controlled, for other patents relating to devices located within the working cylinder or combustion-chamber of an internal-combustion engine and designed to or which in fact would both vaporize oil supplied to the engine and ignite the resulting combustible mixture.

146. IGNITERS, INCANDESCENT, VALVE-CONTROLLED. Incandescent igniting devices differing from those in the preceding subclass in that a valve operated by and in unison with the engine is provided for controlling the flow of the combustible charge to the igniting elements, whereby the time at which ignition of the charge takes place may be determined.

147. IGNITERS, SPARKERS, LOW-TENSION. Devices for igniting the successive combustible charges supplied to and burned within an internal-combustion engine, comprising electrodes extending into the space occupied by the charge to be ignited and electrical means for producing a spark or a series of sparks between the said electrodes, whereby the charge is ignited, and subordinate and auxiliary devices designed and especially adapted for use with igniting devices of the type above set forth and incapable of use in the manner contemplated in other relations. Inasmuch as the devices occurring in the subclasses of internal-combustion engines, igniters, sparkers, are electrical devices adapted for use with an internal-combustion engine and as those devices necessarily more or less resemble electrical devices employed in other arts, it follows that classes and subclasses containing patents relating to the general application of electricity may have to be considered in searches involving electrical means concerned with the ignition of the combustible charge in an internal-combustion engine. Such will not, however, ordinarily be the case, as electricity is considered as a force capa-

CLASS 123—Continued.

ble of general application for various purposes, and the means whereby such force is adapted to a specific purpose—for example, that set forth herein—will ordinarily be found to be distinct from other though somewhat similar means through which the same force is adapted to other purposes. This subclass contains miscellaneous sparking devices for internal-combustion engines in which a current of electricity of low electromotive force is employed, thus necessitating the use therewith of electrodes normally out of contact with each other and which must be brought into contact and separated to produce a spark, as in the following make-and-break subclasses of electrical igniting devices, and subordinate and auxiliary devices designed for use with and to form a part of such an igniting device and incapable of use in the manner contemplated in other relations, the device in question in either case not coming within the terms of the definition of some one of the following sparker subclasses.

Search Class—

175—ELECTRICITY, GENERAL APPLICATIONS, subclasses under Igniting devices.

148. IGNITERS, SPARKERS, HIGH-TENSION. Miscellaneous sparking devices for internal-combustion engines in which a current of electricity of high electromotive force is employed, thus necessitating the use therewith of electrodes permanently separated by a spark-gap, across which the current jumps, as in the jump-spark type of electrical igniting device, and subordinate and auxiliary devices designed for use with and to form a part of such an igniting device and incapable of use in the manner contemplated in other relations, the device in question in either case not coming within the terms of the definition of some one of the following sparker subclasses.

Search Classes—

171—ELECTRICITY, GENERATION, subclass 122, Inductoriums, Induction-coils.

175—ELECTRICITY, GENERAL APPLICATIONS, subclasses under Igniting devices.

149. IGNITERS, SPARKERS, DYNAMOS. Mechanism whereby a dynamo-electric machine is operated by an engine and is adapted to furnish a current of electricity for the purpose of igniting the successive combustible charges supplied thereto and patents disclosing and claiming a dynamo in combination with igniting mechanism, which, considered by itself, would be classifiable in some one of the following igniter subclasses, the connection between the two being other than by means of mere conducting-wires, and patents disclosing and claiming dynamo-electric machines having features of construction or peculiarities in mode of operation particularly adapting them for use with internal-combustion engines for the purpose of igniting the successive combustible charges supplied thereto and rendering their use in other relations or with other devices impossible, or at least unlikely. Dynamos coming within the last of the above cases are generally so intimately associated with or built into the elements constituting the engine with which they are used as to be incapable of separation therefrom and of operation or existence as separate mechanism.

Note.—Combinations of engine and dynamo, adapted to start the engine, maintain current for lights, ignition, etc., may be found in Class 171, ELECTRICITY, GENERATION, subclass 315, Systems.

Note.—Dynamo-electric machines complete in themselves having no element in common with an internal-combustion engine and capable when put in operation of furnishing a current of electricity available for any purpose to which the current produced by the said dynamo is suitable are classified in suitable subclasses of class 171, ELECTRICITY, GENERATION, according to the type of device in question, and neither a positive statement in the specification to the effect that the device in question is intended to be used to furnish current for the igniting device of an internal-combustion engine nor the fact that a claim positively includes an internal-combustion engine or its igniting device in general terms will be sufficient to cause a patent for such a dynamo to be classified as an igniting device for internal-combustion engines.

Note.—Mechanism interposed between an internal-combustion engine and a dynamo driven thereby and designed to furnish current for the igniting device of such engine, the purposes of said mechanism being to maintain a constant speed of the dynamo irrespective of variations in speed of the engine, are not classified in this subclass. For such devices see in class 171, ELECTRICITY, GENERATION, subclass 231, Regulators, Transmitting mechanism, and class 74, MACHINE ELEMENTS, subclass 45, Machine-brakes, Centrifugal speed-regulators.

Search Class—

123—INTERNAL COMBUSTION ENGINES, subclasses 147, Igniters, Sparkers, Low-tension, and 148, Igniters, Sparkers, High-tension.

150. IGNITERS, SPARKERS, COMBINED ADJUSTING AND EXHAUST-REGULATING. Manually-operated means used in connection with sparking devices for determining the time in the cycle of operation of the engine at which the charge shall be ignited, in combination with means for acting upon the exhaust-valve of the engine to regulate the said valve, said last-mentioned means ordinarily operating either to cause the exhaust-valve to be opened upon the compression-stroke of the engine to thereby facilitate the starting thereof or to maintain the exhaust-valve in a partially or wholly open position, thereby acting as a manually-controlled speed-regulator.

151. IGNITERS, SPARKERS, COMBINED SPARKER AND VALVE. Devices comprising a valve for controlling the supply of combustible mixture to the working cylinder or combustion-chamber of an internal-combustion engine or the exhaust of burned gases therefrom, or both the supply and exhaust, together with a sparking device one or both the electrodes of which is carried by and moves with the said valve.

CLASS 123—Continued.

152. IGNITERS, SPARKERS, COMBINED VALVE AND SPARKER OPERATING. Valve-operating mechanism and sparker-operating mechanism in combination and either with or without speed-controlling mechanism. In such of the devices occurring in this subclass as include speed-controlling mechanism the speed-regulator is frequently of the charge-omitting type, and the combined valve and sparker operating mechanism then takes the form of means operating to interrupt the operation of the igniting device of the engine while the supply of combustible charges thereto is suspended. The valve acted upon may be the supply, exhaust, fuel, or other valve upon which the operation of the engine depends, and the sparking device is always of the make-and-break type, hereinafter defined.

Note.—This subclass does not include devices in which the only connection between the valve-operating mechanism and the igniting device is that the valve-operating mechanism controls a circuit-closing device, whereby a circuit included in the sparking device is controlled. Such devices are classified in the subclass 165, Igniters, Sparkers, Circuit-closers.

153. IGNITERS, SPARKERS, MAKE-AND-BREAK. Sparking devices comprising relatively fixed and movable electrodes normally out of contact with each other and mechanically-operated means adapted to move the movable electrode into contact with the fixed electrode shortly before and to separate the electrodes when the combustible charge is to be ignited, whereby an electric circuit in which the electrodes are included is alternately made and broken and a spark produced, and subordinate and auxiliary devices designed and especially adapted for use with sparking devices of the type above set forth and incapable of use in the manner contemplated in other relations, the device in question in either case not coming within the definition of some one of the following make-and-break subclasses. The make-and-break subclasses include sparking devices in which the time during which the electrodes are in contact with each other is much greater than the time during which they are separated, the normal condition of electrodes which must be brought into contact and then separated to produce a spark being considered as out of contact with each other.

154. IGNITERS, SPARKERS, MAKE-AND-BREAK, ELECTROMAGNETIC. Sparking devices differing from those defined in the preceding definition in that the operating means for the movable electrode includes an electromagnet.

Search Class—

175—ELECTRICITY, GENERAL APPLICATIONS, subclass 115, Igniting devices, Automatic.

155. IGNITERS, SPARKERS, MAKE-AND-BREAK, PNEUMATIC. Sparking devices differing from those defined in the second preceding definition in that the means whereby the movable electrode is actuated is dependent for its operation upon a gas under pressure.

156. IGNITERS, SPARKERS, MAKE-AND-BREAK, RECIPROCATING ELECTRODE. Make-and-break sparking devices in which the movable electrode partakes of a reciprocating motion of translation, the relatively fixed electrode being either rigid or yieldable.

157. IGNITERS, SPARKERS, MAKE-AND-BREAK, ROCKING-ELECTRODE, HAMMER-ACTION. Make-and-break sparking devices in which the movable electrode is carried by a rock-shaft and the electrodes separated by a reverse movement of the movable electrode, the relatively fixed electrode being rigid and unyielding, the operating means for the movable electrode including a hammer element adapted to separate the electrodes by delivering a blow to the movable electrode, whereby a more sudden separation of the electrodes is secured and a more effective spark produced.

Note.—For other sparking devices in which the means for separating the electrodes include an element designed to deliver a blow to the movable electrode, but which do not have the structural features enumerated in this definition, see the preceding subclass.

158. IGNITERS, SPARKERS, MAKE-AND-BREAK, ROCKING AND RIGID ELECTRODES. Make-and-break sparking devices in which the movable electrode is carried by a rock-shaft and the electrodes separated by a reverse movement of the movable electrode, the relatively fixed electrode being rigid and unyielding.

159. IGNITERS, SPARKERS, MAKE-AND-BREAK, ROCKING AND YIELDING ELECTRODES. Make-and-break sparking devices in which the movable electrode is carried by a rock-shaft and the electrodes separated by a reverse movement of the movable electrode, the relatively fixed electrode being yieldable, so as to move slightly after contact of the electrodes and during the slight farther movement of the movable electrode.

160. IGNITERS, SPARKERS, MAKE-AND-BREAK, OSCILLATING ELECTRODE. Make-and-break sparking devices in which the movable electrode is carried by a rock-shaft and the electrodes separated by a farther movement of the movable electrode in the same direction.

161. IGNITERS, SPARKERS, MAKE-AND-BREAK, ROTARY ELECTRODE. Make-and-break sparking devices in which the movable electrode is carried by a rotating shaft driven continuously or intermittently in one direction.

162. IGNITERS, SPARKERS, MAKE-AND-BREAK, PISTON-OPERATED. Sparking devices comprising an electric circuit including relatively fixed and movable electrodes, the movable electrode being adapted to make and break the cir-

CLASS 123—Continued.

cuit, as in the preceding make-and-break subclasses, and the operation thereof depending immediately upon the piston of the engine with which the device is used. In the devices in this subclass the movable electrode is either carried by the working piston or is located in the clearance-space of the engine, and said electrode when not carried by the piston is generally operated directly by the piston or by a projection thereon as it comes into contact with the movable electrode near the end of the compression-stroke.

163. **IGNITERS, SPARKERS, MAKE-AND-BREAK, STATIONARY-ELECTRODE STRUCTURE.** The form or construction of the stationary electrode designed for use with and to form a part of a sparking device including relatively fixed and movable electrodes, as in the preceding make-and-break subclasses, such stationary electrodes being ordinarily capable of use with and as forming a part of any sparking device which includes fixed and movable electrodes.

Note.—It is intended that patents classifiable in other make-and-break subclasses, but which disclose specific stationary-electrode structure shall appear in this subclass as cross-references. Inasmuch, however, as all make-and-break sparking devices necessarily include a stationary electrode, a search involving stationary-electrode structures may sometimes extend to all make-and-break subclasses.

164. **IGNITERS, SPARKERS, MAKE-AND-BREAK, ADJUSTING MECHANISM.** Inventions relating to manually-operated means used in connection with make-and-break sparking devices for determining the time in the cycle of operation of the engine at which the electrodes shall be separated and the combustible charge ignited. Includes manually-operated devices for temporarily delaying the ignition of the combustible charge when the engine is to be started for the purpose of preventing a reversal of rotation of the engine at such times.

Note.—Patents disclosing devices designed for use with and to form a part of a high-tension electric igniting system for internal-combustion engines and including an electric circuit having suitable means therein for making and breaking such circuit and also means for adjusting the circuit making and breaking mechanism to vary the time at which the ignition of the charge takes place do not appear in this subclass as cross-references. For such devices see in this class, subclass 165, Igniters, Sparkers, Circuit-closers, and subclasses thereunder.

Note.—For devices for regulating the speed of an internal-combustion engine by automatically varying the time at which the charge therein is ignited, see in this class, subclass 117, Speed-regulators, Automatically-controlled igniting device.

Note.—For devices for determining the time at which the ignition of the charge shall take place, in combination with means designed to act upon and regulate the exhaust-valve of the engine, generally for the purpose of facilitating the starting thereof, see subclass 150, Igniters, Sparkers, Combined adjusting and exhaust regulating, in this class.

Note.—Patents classifiable in other make-and-break subclasses, but which disclose specific spark adjusting or timing mechanism, appear in this subclass as cross-references. Inasmuch, however, as make-and-break sparking devices ordinarily include means for varying the adjustment thereof, so that the charge will be ignited at the proper time, a search involving an adjusting or timing mechanism may extend to all make-and-break subclasses.

165. **IGNITERS, SPARKERS, CIRCUIT-CLOSERS.** Miscellaneous circuit making and breaking devices designed for use with and to form a part of an electrical igniting mechanism for internal-combustion engines, but which device is not in itself the immediate instrument by means of which a spark for igniting the combustible charge is produced, the making and breaking device in question being capable of replacement by a bridging member, thereby producing a continuous circuit without defeating the operation of the remaining elements of the igniting mechanism to produce a spark available for the purpose of igniting the charge. The circuit-closers occurring in this subclass are used with either high or low tension igniting systems, and they are not indispensable to the operation of the system with which they are used.

Note.—For circuit-closing devices included in and forming a part of mechanism for reversing an internal-combustion engine, see in this class, subclass 41, Reversible.

Search Class—

175—ELECTRICITY, GENERAL APPLICATIONS, subclass 282, Switches, Mechanical, and the subclasses thereof, according to the character of the device in question, for details of circuit-closing devices designed for use with electric igniters for internal-combustion engines.

166. **IGNITERS, SPARKERS, CIRCUIT-CLOSERS, SINGLE CIRCUIT.** Inventions relating to circuit-closers operated at regular intervals by the engine, so as to produce a spark when the combustible charge is to be ignited, and being themselves the immediate instrument by means of which the spark is produced, the device in question controlling but one electric circuit. The circuit-closers are generally used with high-tension igniting systems, and they are always essential to the operation of the system with which they are used.

Note.—For automatically-controlled circuit-closing devices similar to those occurring in this subclass, see the subclass 117, Speed-regulators, Automatic igniting device.

167. **IGNITERS, SPARKERS, CIRCUIT-CLOSERS, MULTIPLE CIRCUIT.** Circuit-closers differing from those defined by the preceding definition in that two or more circuits are controlled thereby, the circuits being all alike—that is, all primary circuits or all secondary circuits.

CLASS 123—Continued.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclass 168, Igniters, Sparkers, Circuit-closers, Primary and secondary control.

168. **IGNITERS, SPARKERS, CIRCUIT-CLOSERS, PRIMARY AND SECONDARY CONTROL.** Circuit-closing devices designed to control both the primary and secondary circuits of a high-tension electrical igniting system, they being thus a species of multiple-circuit circuit-closing devices.

169. **IGNITERS, SPARKERS, PLUGS.** Devices used in connection with jump-spark or high-tension igniting systems for internal-combustion engines and included in the secondary circuit thereof, said devices having relatively fixed and insulated electrodes permanently out of contact with each other and the inner extremities of such electrodes being in contact with the combustible charge to be ignited, whereby when a spark or a series of sparks is produced across the space between the electrodes the combustible charge will be ignited. In most of the devices the electrodes are permanently fixed in and carried by a single integral member or spark-plug adapted for use with internal-combustion engines generally.

170. **COOLING.** Such miscellaneous devices for cooling the working cylinder, piston, piston-rod, or other element of an internal-combustion engine as do not come within the terms of the definition of some one of the following subclasses of internal-combustion engines, cooling, and accessory devices designed for and used with cooling systems for internal-combustion engines and not classified in some appropriate cooling subclass.

Note.—Search for cooling devices in which an element of the engine is cooled by a liquid in contact therewith or for accessory devices designed for use with liquid cooling systems should be continued in the subclass 6, Cooling and sealing, in class 230, AIR AND GAS PUMPS, and in class 60, MISCELLANEOUS HEAT-ENGINE PLANTS.

Note.—For internal-combustion engines provided with means for supplying water in any form to the charge either before the ignition thereof within the working cylinder or during the working stroke and in which it is frequently stated in the description thereof that the water is supplied for the purpose of cooling engines, see in this class, subclass 25, Water and hydrocarbon.

Note.—For systems including an engine driven by a gas under pressure, together with an internal-combustion engine, the arrangement being such that the compressed gas either before or after it passes through the first-mentioned engine, wherein it does work without chemical change, is caused to pass around the cylinder or combustion-chamber of the internal-combustion engine, thereby cooling the same, see in this class, subclass 4, Combined devices, Internal-combustion and fluid-pressure, and the subclasses thereof.

Note.—For internal-combustion engines in which the heat energy imparted to the cooling medium is utilized for generating steam for general purposes, see in this class, subclass 2, Combined devices.

Note.—For internal-combustion engines in which the heat energy imparted to the cooling medium is utilized by means of a suitable fluid-pressure motor, see in this class, subclass 6, Combined devices, Internal-combustion and fluid-pressure, Waste-heat utilizing.

Note.—For internal-combustion engines in which the heat of the working cylinder or combustion-chamber is utilized for the purpose of vaporizing a liquid hydrocarbon to be burned within the working cylinder of the engine, see in this class, subclasses 34, Oil-engines, External-vaporizing, and 35, Oil-engines, External-vaporizing, Four-cycle.

Note.—For devices in which the heat energy imparted to the cooling medium is utilized for warming purposes, see class 126, STOVES AND FURNACES, subclass 204, Foot-warmers, and the subclasses thereunder, and class 237, HEAT DISTRIBUTING SYSTEMS, subclass 5, Car, Water.

171. **COOLING, AIR-COOLED.** Cooling devices for internal-combustion engines in which the working cylinder, piston, piston-rod, or other element of the engine to be cooled is cooled by means of air in contact with such element, the cooling-air being ordinarily caused to flow past, around, or through the element to be cooled in a more or less confined stream and at considerable velocity.

Note.—This subclass does not include patents in which the invention relates to means for increasing the radiating or absorbing surface of a given element, and which means are obviously capable of general use wherever it is desired to either dissipate or to absorb heat to thereby effect an interchange of temperature between the said element and the surrounding medium, even though the means in question be disclosed as applied to an element of an internal-combustion engine and as designed to cool said element. Such devices will be classified in this subclass only in cases where their structure is such as to limit their use in the manner contemplated to an internal-combustion engine and in cases where they are used in combination with other elements and form therewith a cooling device coming within the terms of the first clause of this definition.

Note.—Radiating or absorbing devices of the type above set forth are classified in class 237, HEAT-DISTRIBUTING SYSTEMS, subclasses 18, Steam-radiators, and 20, Steam-radiators, Heat-diffusing elements.

Note.—For suggestions as to further fields of search, see in this class, subclass 170, Cooling.

172. **COOLING, COMBINED PACKING AND COOLING.** Devices designed to maintain the piston-rod or plunger of an internal-combustion engine at a temperature sufficiently low for successful working, comprising packing and liquid-cooling means therefor, the two sets of means being so closely associated as to form a combination.

CLASS 123—Continued.

Note.—This subclass does not include patents in which the invention relates solely to packing means for a piston-rod or plunger, such packing means being capable of use with engines and similar structures generally. For such devices see class 121, STEAM-ENGINES, subclass 109, Packing, Rod.

Note.—For devices designed for use with compressing-pumps for ammonia and similar gases and similar structurally to those occurring in this subclass, but which are designed more for the purpose of lubricating the element with which it is used and for preventing the fluid acted upon from passing along the piston-rod or plunger and escaping to the atmosphere than for cooling purposes, see class 230, AIR AND GAS PUMPS, subclass 6, Cooling and sealing.

173. COOLING, CYLINDER, JACKET, AND HEAD CONSTRUCTION. The form, structure, or construction of the working cylinder, the casing or jacket surrounding the same, or the cylinder-head, whereby one or more passages are formed adjacent the working cylinder or combustion-chamber, through which passages a cooling liquid is caused to flow.

Search Class—

230—AIR AND GAS PUMPS, subclass 6, Cooling and sealing.

174. COOLING, HEAT-DISSIPATING DEVICES. Devices used in connection with liquid cooling systems for internal-combustion engines for dissipating the heat absorbed by the cooling liquid while in contact with the element of the engine to be cooled and consisting of a tank, coil, or equivalent structure exposed to the atmosphere and through which the heated cooling liquid circulates, whereby the excess heat of the cooling liquid is dissipated to the relatively cooler medium surrounding the said tank or coil and the liquid cooled for further use, the said heat-dissipating device being structurally separate and distinct from the working cylinder of the engine and located at a distance therefrom. The coils or tanks used with the cooling devices in this subclass are ordinarily so designed as to expose a large surface to the atmosphere, whereby a more rapid dissipation of the surplus heat is secured. They are ordinarily disclosed and claimed in connection with means for connecting them with the element of the engine to be cooled and with such auxiliary devices as are necessary to form a complete cooling system of the type defined herein.

Note.—Patents disclosing devices in which the invention relates to the form, structure, or construction of an air-cooled heat-dissipating coil or equivalent structure designed for and disclosed as capable of use either in and as forming a part of a liquid cooling system for an internal-combustion engine or as a surface condenser for use with a steam-engine are classified in class 62, subclass 28, Cooling radiators, Motor vehicle, which subclass should be searched for devices involving the structure of a radiating tank or coil. Devices of the type here mentioned are generally used with motor-vehicles propelled by internal-combustion or steam engines.

Note.—For structure of heat radiating or absorbing coils and equivalent structure, see class 237, HEAT-DISTRIBUTING SYSTEMS, subclass 18, Steam-radiators; class 62, REFRIGERATION, subclass 2, Beer-coolers.

Note.—For suggestions of further fields of search, see the definition of subclass 170, Cooling, in this class.

175. COOLING, LIQUID-IMPELLING DEVICES. Devices designed for use with and to form a part of a cooling system in which a cooling liquid is employed to cool the working cylinder, piston, piston-rod, or other element of an internal-combustion engine, such device depending for its operation upon the operation of the engine with which it is used and being adapted to maintain a constant flow of the liquid cooling medium past, around, or through the element of the engine to be cooled.

Note.—The devices in this subclass always include some type of pump, and in so far as pump structure is involved in a given device a search therefor should be continued in appropriate subclasses in class 103, PUMPS.

Search Class—

230—AIR AND GAS PUMPS, subclass 6, Cooling and sealing.

176. COOLING, ROD AND PISTON. Devices for cooling the working piston or the piston-rod, or both such elements, of an internal-combustion engine, comprising means whereby a cooling liquid is caused to flow through a chamber in the said piston or through a passage in the said rod or through both the rod and piston.

Search Class—

230—AIR AND GAS PUMPS, subclass 6, Cooling and sealing.

177. COOLING, VALVE. Means for cooling the supply, exhaust, or other valve of an internal-combustion engine or for cooling the seat of such a valve by causing a cooling liquid to flow past, around, or through such valve or its seat or for cooling in the same manner a part of such a valve—as, for example, its stem or a guide therefor—or for cooling two or more of the above-mentioned elements.

Note.—Search also as indicated in the definition of subclass 170, Cooling, in this class.

Note.—For patents in which the invention relates to the form or construction of a cylinder-head, but in which the seat of the supply, exhaust, or other valve is also cooled, as in this subclass, see in this class, subclass 173, Cooling, Cylinder, jacket, and head construction.

Note.—For water-cooled valves used in connection with metallurgical furnaces, see class 75, METALLURGY, subclass 124, Hot-blast valves.

178. COOLING, TEMPERATURE-REGULATORS. Devices for regulating the temperature of the working cylinder, combustion-chamber, or other element of an internal-combustion engine by controlling the supply of cooling medium thereto.

Note.—The devices ordinarily include a thermostatic valve, and search for an invention involving the structure of such a valve

CLASS 123—Continued.

should be continued in classes containing such valves, among which are class 137, WATER DISTRIBUTION, subclass 35, Cocks and faucets, Thermal; classes 236, DAMPERS, AUTOMATIC; and 126, STOVES AND FURNACES, subclass 351, Water-heaters, Liquid or gaseous fuel, Automatic.

179. STARTING DEVICES. Miscellaneous devices for starting an internal-combustion engine from a condition of rest or for facilitating the starting of such an engine not classified in some one of the following subclasses of internal-combustion engines, and starting devices, and accessory devices designed to facilitate the starting of such an engine and incapable of use in the manner contemplated in other relations.

180. STARTING DEVICES, COMBUSTIBLE-MIXTURE SUPPLY. Devices for starting an internal-combustion engine comprising means for supplying a combustible mixture of air and hydrocarbon directly to the working cylinder of the engine, together with means for igniting the said combustible mixture within the working cylinder after its supply thereto, and accessory devices designed and especially adapted for use with such starting devices, the device in question being separate and distinct from the elements constituting the engine and not involved in the normal operation thereof. Includes means for supplying an easily-vaporized fluid to the engine when it is to be started, whereby the initial combustible charges are more easily formed, the engine being afterwards operated by a less volatile fluid, the device in question not coming within the terms of the definition of the subclass 127, Charge-forming devices, Multiple oil-supply. The means for igniting the combustible mixture is frequently the regular igniting device of the engine or such device with suitable auxiliary appliances to adapt it to use in a starting device of the type occurring in this subclass. The essential feature in the devices is that a combustible mixture is supplied directly to the interior of the working cylinder and ignited therein to start the engine by power generated within itself. Such mixture may be supplied at substantially atmospheric pressure or at a comparatively high pressure, and it may or may not be compressed in the working cylinder by a movement of the working piston before ignition.

Note.—Inventions limited to mechanism for igniting a combustible mixture as above when the engine is to be started are classified in this class, subclass 184, Starting devices, Igniters, notwithstanding the fact that the starting devices occurring in this subclass are necessarily provided with some type of igniting device or the fact that the igniting device in question may be designed for use with a starting device of the type occurring in this subclass.

Note.—For internal-combustion engines which are self-starting because of the cycle upon which they operate, a combustible mixture being supplied to the working cylinder thereof under pressure, see in this class, subclass 68, Two-cycle, Pump compression.

181. STARTING DEVICES, COMPRESSED-AIR SUPPLY. Means for starting an internal-combustion engine by means of a noncombustible gas under pressure acting directly upon the working piston of the engine, the flow of said gas thereto being ordinarily controlled by a valve operated by and in unison with the engine.

Note.—For engines designed to use either steam or a combustible mixture as interchangeable sources of power, which might be considered as internal-combustion engines with means for starting the same by steam, see in this class, subclass 20, Steam convertible.

Note.—For systems including an internal-combustion engine and a fluid-pressure engine together with a source of gas under pressure, which gas may be used for starting the engine, and for systems including an internal-combustion engine and a fluid-pressure engine and means whereby surplus power developed by the internal-combustion engine is utilized to compress a fluid to be used to drive the fluid-pressure engine, see in this class, subclass 4, Combined devices, Internal-combustion and fluid-pressure, and the subclasses thereof.

182. STARTING DEVICES, COMPRESSION-RELIEVING. Devices for facilitating the starting of an internal-combustion engine by power applied thereto, comprising means for permitting a portion of the combustible charge in the working cylinder to escape therefrom during a part of the compression-stroke of the engine, whereby the volume of the combustible charge compressed and ignited upon the initial strokes of the engine is reduced and the external work necessary to start the engine is lessened.

Search Class—

123—INTERNAL COMBUSTION ENGINES, subclass 150, Igniters, Sparkers, Combined adjusting and exhaust-regulating.

183. STARTING DEVICES, GUNPOWDER. Starting devices for internal-combustion engines in which a charge of gunpowder or other explosive substance is exploded and the resulting gases allowed to act upon the working piston of the engine.

184. STARTING DEVICES, IGNITERS. Devices for igniting the charge within the working cylinder of an internal-combustion engine at starting in cases where the engine is started by introducing and burning a combustible mixture within the working cylinder thereof, which device is ordinarily a supplemental igniting device separate and distinct from the regular igniting device of the engine and designed for temporary use at starting or a device independent of the engine for actuating the regular igniting device thereof.

Note.—The combustible mixture may be supplied to the working cylinder by separate and distinct means, as in subclass 180, Starting devices, Combustible-mixture supply, or it may

CLASS 123—Continued.

reach the cylinder by way of the regular supply-passage and inlet-valve of the engine operating in their ordinary manner.

Note.—This subclass does not include devices for delaying the ignition of the combustible mixture to facilitate the starting of the engine, but which device is not in itself capable of igniting the charge. For such devices, if manually operated, see subclass 164, Igniters, Sparkers, Make-and-break, Adjusting mechanism, and, if automatically operated, see subclass 117, Speed-regulators, Automatically-controlled igniting device, in this class.

Note.—For electrical igniting devices provided with interchangeable sources of electricity, one for use at starting and the other in the normal operation of the engine, see in this class, subclasses 147, Igniters, Sparkers, Low-tension, and 148, Igniters, Sparkers, High-tension.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclass 180, Starting devices, Combustible-mixture supply.

185. STARTING DEVICES, MECHANICAL. Mechanical devices for facilitating the starting of an internal-combustion engine by hand, such device forming a connection between the main shaft of the engine and a conveniently-arranged operating member, through which connection the operator may revolve the said main shaft when the engine is to be started.

Search Class—

74—MACHINE ELEMENTS, according to the type of the starting device in question.

186. STARTING DEVICES, MECHANICAL, SPARK-DELAYING. Mechanisms comprising a mechanical starting device, as defined in the above definition, and, in combination therewith, means for acting upon the sparking device of the engine in such a manner as to delay the ignition of the combustible charge. The devices are in the nature of safety devices, wherein the act of starting the engine by hand will automatically move an element of the sparking device, so as to delay the ignition of the charge, and thus prevent injury to the operator by the engine starting in the wrong direction.

187. STARTING DEVICES, MECHANICAL, MOTORS. A mechanical motor and means whereby energy derived from an internal-combustion engine while in operation is communicated to and stored by said motor to be afterward applied through suitable means to the purpose of starting the same engine from a condition of rest.

Note.—Devices for starting an internal-combustion engine which are, in fact, merely mechanical motors applied to drive the engine at starting and in which the stored energy is derived from a source other than the engine which such motor is subsequently to start will not be classified in this subclass, even though the motor in question be designed for the specific purpose of starting an internal-combustion engine.

Search Classes—

105—RAILWAY ROLLING-STOCK, subclass 27, Starters and brakes.

185—MOTORS, subclasses 4, Composite, Weight; 9, Composite, Spring; 27, Weight, and 37, Spring, and the subclasses under each, for details of construction, and subclasses 12, Composite, Spring, Winding, Motor, Momentum type, and 41, Spring, Winding, Motor, Momentum type.

187.5. STARTING DEVICES, PRIMERS. Devices designed to introduce a fluid into the working cylinder of the engine, which when mixed with the gaseous contents thereof forms a combustible mixture which is ignited to start the engine, the device in question being distinct from the elements constituting the engine and not involved in the normal operation thereof.

188. VALVES. Inventions relating to the supply, exhaust, or fuel valve of an internal-combustion engine or to a valve performing the functions of two or all of such valves irrespective of the type or form of the engine with which the valve may be used, the cycle upon which it operates, or of the means whereby the said valve is operated by the engine. The valve-seat, the chamber in which the valve is located, the end of the supply-conduit leading into the valve-chamber, and other accessories not extending to the valve-operating mechanism when such elements are disclosed are considered as parts of the valve for the purposes of this classification.

Note.—This being a subclass of elements, a complete search would necessarily include all devices in which similar elements are employed. Patents disclosing and claiming a single valve structure designed to control the supply or exhaust ports of an engine and also to form, together with an external flame, a flame-igniting device are classified in the subclass 144, Igniters, Flame, in this class. See also in this class, subclasses 120, Charge-forming devices, Gas and air mixers, and 177, Cooling, Valve.

Search Classes—

103—PUMPS, subclass 66, Elements, Valves.

136—STEAM-ENGINE VALVES, according to the type of the valve in question.

137—WATER DISTRIBUTION, subclass 32, Check-valves.

230—AIR AND GAS PUMPS, subclass 34, Valves and valve-gear.

189. VALVES, DETACHABLE. Conveniently disassembled valves and accessories thereof and ordinarily comprises means for attaching the supply or exhaust conduit to the engine in such a way as to be readily disconnected therefrom, thereby permitting the convenient inspection and generally the removal of the valve located at the end of the conduit in question.

Note.—Valves coming within the terms of the above definition, but which are capable of general use, as with air-compressors, pumps, engines, etc., are classified in class 103, PUMPS, subclass 66, Elements, Valves, unless there is something about the device in question limiting its use to use with an internal-combustion engine.

CLASS 123—Continued.

190. VALVES, ROTARY. Rotating or oscillating valves designed for general use with internal-combustion engines, as set forth in the definition of subclass 188, Valves, above.

Search Classes—

123—INTERNAL-COMBUSTION ENGINES, subclass 80, Four-cycle, Rotating valve.

136—STEAM-ENGINE VALVES, subclass 7, Rotary.

230—AIR AND GAS PUMPS, subclass 34, Valves and valve-gear.

191. COMBUSTION-CHAMBERS. The form, construction, or other features of the combustion-chamber or clearance-space of an internal-combustion engine, excepting devices in which the vaporization of a liquid hydrocarbon within the working cylinder is involved. Inasmuch as the supply and exhaust conduits of the engine ordinarily communicate directly with the combustion-chamber thereof and as the igniting device is normally located therein, the relation of those parts to the combustion-chamber itself is often involved in and specifically set forth in the claim defining the invention.

Note.—Patents disclosing and claiming combustion-chamber structure, but in which the vaporization of oil within the engine, or both the vaporization of oil and the ignition of the resulting combustible mixture, is involved, are classified with internal-vaporizing oil-engines, according to the type of oil-engine with which they are obviously intended to be used.

Note.—For engines including combustion-chambers and means for varying the volume thereof, see in this class, subclass 48, Adjustable combustion-chamber.

Note.—For engines including a combustion-chamber separated from the working cylinder by a valve operated by the engine, see in this class, subclass 49, Valve-controlled combustion-chamber.

192. COMPENSATING DEVICES. Compensating or counterbalancing devices adapted only for use with an internal-combustion engine, the purpose of such device being to render the force transmitted to the main driving-shaft of the engine more uniform and to minimize or counteract the vibrations which the reciprocation of the moving parts of the engine tends to establish.

Note.—Compensating devices of general application and capable of use with engines irrespective of the fluid by which they are operated are classified in class 121, STEAM-ENGINES, and class 74, MACHINE ELEMENTS, subclass 20, Overcoming dead centers.

193. CYLINDER AND PISTON CONSTRUCTION. The form, construction, or other features of a piston and such portions of the cylinder as cooperate therewith, adapted solely for use with an internal-combustion engine or having features of construction or peculiarities in mode of operation rendering its use in other relations or with other devices impossible, or at least improbable.

Note.—Does not include devices within the terms of the definition of subclasses 173, Cooling, Cylinder, jacket, and head construction, or 176, Cooling, Rod and piston.

Note.—Cylinder or piston construction of general application and capable of use with engines irrespective of the fluid by which they are designed to be operated, even though it be stated that the device in question is intended for use with and to form a part of an internal-combustion engine, is classified in steam-engine subclasses, unless there is something about the device limiting it to use with an internal-combustion engine, as above specified. This being a subclass of elements, a complete search would necessarily include all devices in which similar elements are employed. Especially—

Search Classes—

103—PUMPS, subclasses 59, Elements, Cylinders, and 63, Elements, Pistons.

121—STEAM-ENGINES, subclasses 104, Pistons, and 105, Attachments.

194. EXHAUST TREATMENT. Means for operating upon or for dealing with the exhaust-gases of an internal-combustion engine in such a manner as to render the direct discharge of such gases into the atmosphere less objectionable, the device in question being designed with special reference for use with such an engine and incapable of use in the manner contemplated in other relations or having features of construction or peculiarities in mode of operation limiting it to use with an internal-combustion engine or rendering its use in other relations unlikely.

Note.—The devices invariably act as mufflers to lessen the noise which would be present if the burned gases were discharged directly into the atmosphere. This subclass does not, however, include devices in which the muffling action is the only function performed and which devices would obviously act in the same manner to lessen the noise resulting from the intermittent discharge of any gas under pressure directly into the atmosphere; nor does it include devices in which there is nothing inherent in the structure or mode of operation which would limit the use of such devices to use with an internal-combustion engine, even though the device in question be designed for use with an internal-combustion engine and be so disclosed. For such devices see class 121, STEAM-ENGINES, subclass 116, Mufflers.

195. FRAME CONSTRUCTION. The form, construction, or other features of the casing, frame, or bed-plate which supports the various elements necessary to form a complete internal-combustion engine and maintains them in proper operative relation with one another and includes such constructions of the cylinder as relate to the means of attachment to the bed.

Search Class—

121—STEAM-ENGINES, subclass 105, Attachments.

CLASS 123—Continued.

196. **LUBRICATORS.** Lubricating means for internal-combustion engines, the device in question being designed and adapted for use only with such an engine and being dependent for its action upon peculiarities of operation present only in internal-combustion engines.

Note.—Lubricating means capable of use with engines generally, irrespective of the fluid by which they are operated, and capable of use with air, steam, internal-combustion, or other engines are classified in class 121, **STEAM-ENGINES**, subclass 115, Lubricators, notwithstanding they may be designed with reference to use with internal-combustion engines.

197. **TRANSMISSION MECHANISM.** Mechanism intermediate the working piston and the main driving-shaft of the engine through which power is transmitted to the said shaft. The

CLASS 123—Continued.

ordinary parts of an engine may sometimes be mentioned broadly in the claims, provided no specific construction of such parts is involved.

Note.—For other examples of transmission mechanism, such mechanism, however, being involved in the cycle upon which the engine operates, see in this class, subclasses 46, Free piston, and 78, Four-cycle, Variable clearance.

Search Class—

74—MACHINE ELEMENTS, according to the character of the device in question.

198. **ACCESSORIES.** Miscellaneous accessory devices designed for use with internal-combustion engines not otherwise provided for in this classification.

CLASS 124.—AIR-GUNS, CATAPULTS, AND TARGETS.

DEFINITIONS.

Class.

This class includes the various forms of projectile-throwing apparatus in which no explosion of the propelling agent takes place, and also various gun, archery, marble, or other projectile targets.

Subclasses.

1. CATAPULTS. Miscellaneous projectile throwing devices not classifiable elsewhere.
2. CATAPULTS, RUBBER-SPRING. A stick or fork adapted to be held in one hand having a rubber cord or band attached to its end, and a suitable pocket for the projectile attached to the rubber.
3. TARGET-TRAPS. Devices, usually adapted to be operated from a distance, for throwing balls, clay figures, disks, and other targets into the air.
4. TARGET-TRAPS, MAGAZINE. Target-traps having self-feeding arrangements.
5. TARGET-TRAPS, PIVOTED THROWING-ARM. Target-traps which throw the target from the outer end of a pivoted arm, which arm may be impelled by a separate spring or may itself be of spring metal.
6. TARGET-TRAPS, PIVOTED THROWING-ARM, ROTATABLE. Target-traps in which means is provided for rotating the throwing-arm to change the direction in which the target is thrown.
7. BOWS AND CROSS-BOWS. Projectile throwers in which a bow is relied upon as the spring to propel the projectile.
Search Class—
124—AIR-GUNS, CATAPULTS AND TARGETS, subclasses 8, Guns, Air, and 12, Guns, Spring, and subclasses thereunder, for features of lock or trigger construction.
8. GUNS, AIR. Projectile throwers employing compressed air as the propelling agent.
Search Class—
42—FIREARMS, for features of gun-locks.
9. GUNS, AIR, BLOW. Air-guns in which the operator uses his breath as the propelling agent.

CLASS 124—Continued.

10. GUNS, AIR, SPRING. Air-guns in which a spring is employed to compress the air which in turn expels the projectile.
Search Classes—
124—AIR-GUNS, CATAPULTS AND TARGETS, subclass 12, Guns, Spring.
42—FIREARMS, for features of lock construction.
11. GUNS, AIR, SPRING, MAGAZINE. Spring air-guns having a suitable reservoir and means for feeding the projectiles successively to place.
Search Class—
124—AIR-GUNS, CATAPULTS AND TARGETS, subclass 13, Guns, Spring, Magazine.
12. GUNS, SPRING. Guns employing springs as the sole propelling means.
Search Classes—
124—AIR-GUNS, CATAPULTS AND TARGETS, subclass 10, Guns, Air, Spring.
42—FIREARMS, for lock structure.
13. GUNS, SPRING, MAGAZINE. Spring-guns having a suitable magazine and means for feeding the projectiles successively to proper position.
Search Class—
124—AIR-GUNS, CATAPULTS AND TARGETS, subclass 11, Guns, Air, Spring, Magazine.
14. GUNS, SPRING, RUBBER. Spring-guns in which the propelling springs are rubber cords, strips, or bands.
Search Class—
124—AIR-GUNS, CATAPULTS AND TARGETS, subclass 7, Bows and cross-bows, for lock structure.
15. TARGETS. Various gun, archery, marble, or other projectile targets, including stationary, alarm, self-indicating, traveling, swinging, and flying targets.
- 15.5. TARGETS, AIM-RECORDERS. Devices for teaching gun-pointing in which the firearm is aimed at the desired object and is so connected with a small target or a recording device as to control their relative positions, and when fired the precise spot aimed at is marked on the target.
16. TARGETS, MOVING. Targets in which the part shot at is at the time traveling, swinging, or otherwise moving.
17. TARGETS, FLYING. Targets adapted to be thrown into the air by a target-trap.
18. TARGETS, FLYING, BALLS. Target-balls to be thrown from ball-traps.

CLASS 126.—STOVES AND FURNACES.

DEFINITIONS.

Class.

This class includes, generally, apparatus for the application of heat. It comprises heating and cooking stoves, hot-air furnaces, and accessories; hot-air radiators and heating drums; open water heaters, air and water heaters adapted for sterilizing liquids in sealed inclosures and the like; dampers, fireplaces, and stovepipes; and is the generic class for fuel grates.

Note.—This class includes the fuel burner when combined with the stove or furnace structure, but the structure of a fluid fuel burner alone is classified in class 158, LIQUID AND GASEOUS FUEL BURNERS. Combinations of a particular stove or furnace structure with a closed water heater or steam generator are classified here; but the structure of the water heater or steam generator, if it be of general application, is classified in class 122, LIQUID HEATERS AND VAPORIZERS. This class includes only water heaters of the nonpressure type unless they are structurally tied to the stove or furnace or form a necessary part thereof. Water-cooled grates are classified in class 122, LIQUID HEATERS AND VAPORIZERS; air-cooled grates of a type designed to heat the air for boiler furnaces, and also grates for progressively feeding the fuel along the grates, in class 110, FURNACES; while grates of general use in stoves, hot-air furnaces, or boiler furnaces are classified in class 126, STOVES AND FURNACES.

Note.—Class 110, FURNACES, includes the broad art of combustion of solid fuel and solid and fluid fuel combined. Class 158, LIQUID AND GASEOUS FUEL BURNERS, relates to the broad art of combustion of fluid fuel. Class 219, ELECTRIC HEATING AND RHEOSTATS, relates to the generation of heat by electricity. Class 236, DAMPERS, AUTOMATIC, is the broad class of temperature control and regulation, and includes thermostatically controlled valves and dampers. Class 237, HEAT DISTRIBUTING SYSTEMS, includes heating systems for distributing heat by using air, steam, or water as the agent.

Subclasses.

1. STOVES, COOKING. The well-known kitchen-stove of the portable variety.

Search Class—

126—STOVES AND FURNACES, subclasses 100, Hot-air furnaces, Combined furnace and cooking-stove; 137, Fire-places, Cooking and oven attachments; 218, Stove lids and tops, Heating-stove, Cooking attachments; 222, Trash-burners, Cooking-stoves; 223, Trash-burners, Cooking-stoves, Feeding attachments.

2. STOVES, COOKING, DOUBLE FIRE-POT. Cooking-stoves that have two or more fire-pots related to a single structure.

Search Class—

126—STOVES AND FURNACES, subclasses 3, Stoves, Cooking, Double fire-pot, Cooking and heating, and 111, Hot-air furnaces, Double fire-pot.

3. STOVES, COOKING, DOUBLE FIRE-POT, COOKING AND HEATING. Combined cooking and heating stoves provided with double fire-pots.

Search Class—

126—STOVES AND FURNACES, subclasses 2, Stoves, Cooking, Double fire-pot; 4, Stoves, Cooking, Combined cooking and heating stove; 111, Hot-air furnaces, Double fire-pot, and 125, Fireplaces, Two-room direct radiation.

4. STOVES, COOKING, COMBINED COOKING AND HEATING STOVE. Includes, broadly, all stoves employed for combined cooking and room-heating purposes. In this subclass will be found what are generally known as "parlor cooking-stoves."

Search Class—

126—STOVES AND FURNACES, subclasses 3, Stoves, Cooking, Double fire-pot, Cooking and heating; 100, Hot-air furnaces, Combined furnace and steam or water, and 218, Stove lids and tops, Heating-stove, Cooking attachments.

5. STOVES, COOKING, COMBINED COOKING AND HEATING STOVE, STEAM OR WATER GENERATORS. Combined cooking and heating stoves provided with steam or hot-water generators for house-heating, power, or cooking.

Search Class—

126—STOVES AND FURNACES, subclasses 20, Stoves, Cooking, Ovens, Steam or hot water; 101, Hot-air furnaces, Combined furnace and steam or water; 132, Fireplaces, Water-backs; 133, Fireplaces, Water-backs, Liquid or gaseous fuel; 210, Foot-warmers, Liquid or gaseous fuel, Water-heater, and 365, Water-heaters, Stovepipe, Circulation.

6. STOVES, COOKING, COMBINED COOKING AND HEATING STOVE, AIR-HEATING. Combined cooking and heating stoves which have means for heating and circulating a current of air.

Search Class—

126—STOVES AND FURNACES, appropriate subclasses under Heating-stoves for detail air-heating features.

7. STOVES, COOKING, COMBINED COOKING AND HEATING STOVE, MAGAZINE. Combined cooking and heating stoves which contain a magazine or self-feeder.

Search Class—

126—STOVES AND FURNACES, Magazine subclasses, for specific magazine features.

CLASS 126—Continued.

8. STOVES, COOKING, BRICK-SET. Kitchen-stoves set in masonry, permanent in character.

Search Class—

126—STOVES AND FURNACES, appropriate subclasses, for stove features in detail.

9. STOVES, COOKING, KNOCKDOWN OR SEPARABLE. Types of cooking-stoves structurally adapted to be folded or the several parts separated, so as to allow for its easy transportation from place to place. The stoves in this class are usually termed "portable furnaces."

Search Class—

126—STOVES AND FURNACES, subclasses 29, Stoves, Cooking, Summer, Field; 30, Stoves, Cooking, Summer, Field, Supporting-frame; 59, Stoves, Heating, Camp; and 275, Ovens, Domestic, Portable, for knockdown or separable stove features.

10. STOVES, COOKING MAGAZINE. Cooking-stoves that are provided with magazines or self-feeding coal devices.

Search Class—

126—STOVES AND FURNACES, appropriate Magazine subclasses for magazine features *per se*.

11. STOVES, COOKING, MAGAZINE, PORTABLE. Cooking-stoves provided with coal-receptacles adapted to be placed in the stove-holes of cooking-stoves and means for feeding the coal to the fire-pot.

Search Class—

126—STOVES AND FURNACES, subclasses 223, Stoves, Cooking, Feeding attachments, and 224, Trash-burners, Domestic refuse-burners.

12. STOVES, COOKING, HEARTHES. Stoves where the improvements reside wholly in the hearth; also, means for attaching them to the stove.

13. STOVES, COOKING, HEARTHES, FIRE-POT. Cooking-stove hearths that are provided with fire-pots for cooking or broiling purposes.

Search Classes—

126—STOVES AND FURNACES, subclasses 14, Stoves, Cooking, Broiling attachments, and 41, Stoves, Cooking, Liquid and gaseous fuel, Gas, Broilers.

53, DOMESTIC COOKING VESSELS, subclass 5, Gridirons, for broiler features.

14. STOVES, COOKING, BROILING ATTACHMENTS. Attachments for broiling purposes that are inseparable from the stove structure, except those found in subclass 113, Stoves, Cooking, Hearths, Fire-pot.

Search Class—

126—STOVES AND FURNACES, subclass 41, Stoves, Cooking, Liquid or gaseous fuel, Gas, Broilers.

15. STOVES, COOKING, FEEDING AIR. Stoves in which the invention resides in means for the preliminary heating of air before its introduction into the combustion-chamber or flues.

Search Classes—

126—STOVES AND FURNACES, subclasses under Feeding Air; also subclass 21, Stoves, Cooking, Ovens, Ventilated.

110—FURNACES, subclass 72, Furnace structure, Feeding air.

16. STOVES, COOKING, FLUE-CLEANERS. Stoves in which the invention resides in means for cleaning the flues; also, combined scrapers and soot-receptacles applicable to this class of stove.

Search Classes—

126—STOVES AND FURNACES, subclass 290, Soot-catchers, for forms of soot-receptacles.

15—BRUSHING AND SCRUBBING, subclass 41, Chimney-cleaners, Flue and stovepipe.

17. STOVES, COOKING, ELEVATED OVENS, SMOKE-PIPE HEATED. Devices that have ovens supported by a stovepipe above the top plate of a stove and heated thereby. In this subclass will be found warming-ovens that are stovepipe-heated.

Search Class—

126—STOVES AND FURNACES, subclasses 183, Heating-drums; 188, Heating-drums, Stovepipe, and 189, Heating-drums, Stovepipe, Hot-air, for detail structural features.

18. STOVES, COOKING, ELEVATED OVENS, TOP-PLATE SUPPORTED. Stoves in which the oven is elevated above and supported by the stove-top. In this subclass will be found elevated warming-ovens other than those that are smoke-pipe heated.

Note.—See note under subclass 17, Stoves, Cooking, Elevated ovens, Smoke-pipe heated.

19. STOVES, COOKING, OVENS. Devices where the improvements reside in the oven structure.

Search Class—

126—STOVES AND FURNACES, subclass 273, Ovens, Domestic, and the subclasses thereunder.

CLASS 126—Continued.

20. **STOVES, COOKING, OVENS, STEAM OR HOT WATER.** Ovens that are heated by steam or hot water, either where the steam or hot water surrounds the oven or where the steam enters the oven.

Search Classes—

126—STOVES AND FURNACES, subclass 370, Water-heaters, Vessels, Steam or water heated, and the subclasses thereunder.

53—DOMESTIC COOKING VESSELS, subclass 2, Boilers, Domestic, Steamers.

21. **STOVES, COOKING, OVENS, VENTILATED.** Ovens where the improvements consist in heating a current of air and circulating it through the oven. The heated air is usually fed to the combustion-chamber or flues of a cooking-stove.

Search Class—

126—STOVES AND FURNACES, the several Feeding-air subclasses for detail features for air-heating means.

22. **STOVES, COOKING, OVENS, PROTECTOR-PLATE.** Devices to be placed in cooking-stove ovens for the purpose of protecting articles to be baked therein. Some of these devices are provided with air-moistening means.

23. **STOVES, COOKING, REVERSIBLE.** Stoves that are convertible into a right and left hand stove; also, where the smoke-collar is interchangeable from the back to the top plate, or vice versa.

Search Class—

126—STOVES AND FURNACES, appropriate subclasses under Cooking-stoves for Stove structures.

24. **STOVES, COOKING, SHIP'S GALLEY.** Cooking stoves counterbalanced or suspended to maintain their equilibrium.

Search Classes—

114—SHIPS, subclass 188, Furniture, and the subclasses thereunder.

25. **STOVES, COOKING, SUMMER.** Stoves that are portable in character, usually employed in outdoor work, and adapted to burn charcoal or light fuel. These stoves are frequently called "braziers."

Search Class—

126—STOVES AND FURNACES, subclasses 227, Tool-heaters, Flat-iron; 230, Tool-heaters, Liquid or gaseous fuel, Flat-iron, and 236, Tool-heaters, Soldering-iron.

26. **STOVES, COOKING, SUMMER, DETACHABLE FIRE-POT.** Portable fire-pot structures adapted to be supported in and cooperate with the stove-hole of ordinary cooking-stoves and usually employing charcoal or light fuel.

Search Class—

126—STOVES AND FURNACES, subclasses 227, Tool-heaters, Flat-iron; 230, Tool-heaters, Liquid or gaseous fuel, Flat-iron, and 236, Tool-heaters, Soldering-iron.

27. **STOVES, COOKING, SUMMER, STOVE-TOP SUPPORTED.** Stoves designed to be supported upon the top plate of the ordinary kitchen-stove, and the smoke-outlet has communication with the stove proper through the medium of the stove-lid opening. These devices are frequently termed "portable furnaces."

Search Class—

126—STOVES AND FURNACES, subclass 26, Stoves, Cooking, Summer, Detachable fire-pot.

28. **STOVES, COOKING, SUMMER, STOVE-TOP SUPPORTED, STOVE-FLUE CONNECTED.** Top-plate supported stoves in which the smoke-outlet has direct connection with the stovepipe or smoke-flue of the stove. These devices are frequently termed "portable furnaces."

29. **STOVES, COOKING, SUMMER, FIELD.** Stoves designed to be employed in the open air and are what may be termed "bottomless," the fire being built upon the ground.

Search Classes—

126—STOVES AND FURNACES, subclass 59, Stoves, Heating, Camp.

110—FURNACES, subclass 21, Furnace structure, Refuse, Stump.

30. **STOVES, COOKING, SUMMER, FIELD, SUPPORTING-FRAME.** Devices in the nature of supports and tripods designed to suspend or support cooking utensils over a fire built upon the ground.

Search Class—

248—SUPPORTS.

31. **STOVES, COOKING, WATER-HEATING, FLUE EXTENSION.** Stoves in which a tank containing water to be heated is placed in an extension-chamber through which the products of combustion pass. This type of stove is generally known as "reservoir cooking-stove."

Search Class—

126—STOVES AND FURNACES, subclass 364, Water-heaters, Stovepipe.

32. **STOVES, COOKING, SPITTOON ATTACHMENTS.** The title is self-explanatory.

33. **STOVES, COOKING, TABLES, STEAM-HEATED.** Devices that are in the form of shallow chambers provided with means for causing a circulation of steam or hot water therein, whereby the top plates or receptacles placed thereon are heated. Candy-tables, carving-tables, food-warming vessels, and similar devices are to be found in this subclass.

CLASS 126—Continued.

Search Class—

126—STOVES AND FURNACES, subclasses 370, Water-heaters, Vessels, Steam or water heated; 371, Water-heaters, Vessels, Steam or water heated, Closed chamber or coil, and 369, Water-heaters, Steaming apparatus.

34. **STOVES, COOKING, WATER-BACKS.** Stoves provided with generators, steam or hot-water, located in or adjacent to the combustion-chamber.

Search Class—

126—STOVES AND FURNACES, subclasses 5, Stoves, Cooking, Combined cooking and heating stove, Steam or water generators; 53, Stoves, Cooking, Liquid or gaseous fuel, Water-backs, and 365, Water-heaters, Stovepipe, Circulation.

35. **STOVES, COOKING, WATER-BACKS, SAFETY DEVICES.** Stoves having water-backs that are provided with means for preventing the bursting of the water-back, due to excessive internal pressure as the result of overheating or the freezing of the water.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, subclass 504, Safety devices, and the subclasses thereunder.

137—WATER DISTRIBUTION, subclasses 35, Cocks and faucets, Thermal, and 92, Cocks and faucets, High temperature.

220—METALLIC SHIPPING AND STORING VESSELS, subclass 121, Tank attachments, Safety.

236—DAMPERS, AUTOMATIC, subclass 16, Fusible.

36. **STOVES, COOKING, LIQUID OR GASEOUS FUEL, COMBINED COAL AND GAS.** Combined coal and gas stoves where the gas-stove is a permanent part of the cooking stove or range.

Search Classes—

126—STOVES AND FURNACES, appropriate subclasses under the subtitle Cooking-stoves for stove features; appropriate subclasses under Gas-stoves for gas-stove features.

158—LIQUID AND GASEOUS FUEL BURNERS, appropriate subclasses, for burner features *per se*.

37. **STOVES, COOKING, LIQUID OR GASEOUS FUEL, CABINET.** Cabinets or inclosing casings that are structurally designed to inclose or conceal gas or liquid-fuel stoves when not in use. The cabinets are usually provided with compartments wherein articles of food and the like may be placed.

Search Class—

45—FURNITURE for cabinet features *per se*.

38. **STOVES, COOKING, LIQUID OR GASEOUS FUEL, FOLDING OR NESTING KIT.** Devices adapted to be folded or slipped together and designed as such to contain the heating element and, as a rule, the article acted upon by the heating element. These devices are frequently termed "pocket-stoves."

39. **STOVES, COOKING, LIQUID OR GASEOUS FUEL, GAS.** Improvements in the ordinary commercial gas-stove.

Search Classes—

126—STOVES AND FURNACES, subclasses 40, Stoves, Cooking, Liquid or gaseous fuel, Gas, Burner-stands, and 230, Tool heaters, Liquid or gaseous fuel, Flat-iron.

158—LIQUID AND GASEOUS FUEL BURNERS for burner construction.

40. **STOVES, COOKING, LIQUID OR GASEOUS FUEL, GAS, BURNER-STANDS.** Devices in the nature of combined burner and stand, that are portable in character, and as such are designed to be placed upon a table or similar article of support. These devices are usually of the "single-burner" variety.

41. **STOVES, COOKING, LIQUID OR GASEOUS FUEL, GAS, BROILERS.** Combined gas-stove structures and broiling attachments.

Search Classes—

126—STOVES AND FURNACES, subclasses 13, Stoves, Cooking, Hearths, Fire-pots, and 14, Stoves, Cooking, Broiler attachments.

53—DOMESTIC COOKING VESSELS, subclass 5, Gridirons.

42. **STOVES, COOKING, LIQUID OR GASEOUS FUEL, GAS, SAFETY ATTACHMENTS.** Devices that are designed to simultaneously close the valves in the branch pipes when the valve in the main supply is closed, also valve-locking means that will prevent the accidental opening of the valves.

Search Classes—

126—STOVES AND FURNACES, subclass 351, Water-heaters, Liquid or gaseous fuel, Automatic.

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 115, Burners, Gas, Lighting devices.

43. **STOVES, COOKING, LIQUID OR GASEOUS FUEL, LIQUID, ALCOHOL.** Combined heating and alcohol-burner devices.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 96, Burners, Liquid-fuel, Absorbent, and 97, Burners, Liquid-fuel, Absorbent, Alcohol, for burner features *per se*.

44. **STOVES, COOKING, LIQUID OR GASEOUS FUEL, LIQUID, VAPOR.** The general structure of liquid-fuel cooking-stoves of the well-known retort vapor-burner type.

CLASS 126—Continued.

Search Classes—

126—STOVES AND FURNACES, subclass 230, Tool-heaters, Liquid or gaseous fuel, Flat-iron.

158—LIQUID AND GASEOUS FUEL BURNERS, subclasses of Retorts.

45. STOVES, COOKING, LIQUID OR GASEOUS FUEL, LIQUID, WICK. The title is self explanatory.

46. STOVES, COOKING, LIQUID OR GASEOUS FUEL, LIQUID, WICK, EXTENSION-TOP. Liquid-fuel wick-type stoves where the improvement resides in the means for giving the top an enlarged or extended cooking-surface.

Search Class—

126—STOVES AND FURNACES, subclass 216, Stove lids and tops, Liquid or gaseous fuel, Extension-top.

47. STOVES, COOKING, LIQUID OR GASEOUS FUEL, LIQUID, WICK, LAMP-TYPE. Liquid-fuel wick lamp-type cooking-stove devices where the heater is of the ordinary lamp or illuminating type structure.

48. STOVES, COOKING, LIQUID OR GASEOUS FUEL, LIQUID, WICK, LAMP TYPE, COMBINED TOP, CHIMNEY, AND BURNER. Liquid-fuel wick lamp-type stoves where the improvement resides in the combined top, chimney, and burner of a cooking-stove lamp. These devices are frequently termed "drums" in the art.

Search Class—

126—STOVES AND FURNACES, subclass 47, Stoves, Cooking, Liquid or gaseous fuel, Liquid Wick, Lamp type for details.

49. STOVES, COOKING, LIQUID OR GASEOUS FUEL, LIQUID, WICK, RESERVOIR-SUPPORTING TOP AND BURNER. Liquid-fuel wick-stove devices in which the combined supporting-top and burner are supported in an elevated position from and above the oil-reservoir.

Search Class—

126—STOVES AND FURNACES, subclasses under the Lamp type for details.

50. STOVES, COOKING, LIQUID OR GASEOUS FUEL, LIQUID, WICK, SUPPORTING-FRAME. Gas, liquid-fuel, and vapor stove frames, usually of skeleton form, provided with liquid or gaseous fuel heating-burners and designed to support the ordinary kitchen utensils.

Search Class—

126—STOVES AND FURNACES, subclass 211, Stove lids and tops, and the subclasses thereunder.

51. STOVES, COOKING, LIQUID OR GASEOUS FUEL, LIQUID, DRIP PAN OR RECEPTACLE. Devices that are in the form of pans or receptacles so attached to liquid or vapor stove supporting frames that they will catch the oil dripping or overflowing from a burner or burners. Means are sometimes provided for conducting the accumulated oil from the pans to a receptacle.

52. STOVES, COOKING, LIQUID OR GASEOUS FUEL, VALVE MECHANISM, ARTICLE-CONTROLLED. Types of valves that are opened by the weight of the article to be heated and closed through the medium of a weight or spring.

Search Class—

126—STOVES AND FURNACES, subclasses 234, Tool-heaters, liquid or gaseous fuel, Gas-burner attachments, Tool-controlled valve, and 238, Tool-heaters, Soldering-iron, Gas-heaters, Tool-controlled valve.

53. STOVES, COOKING, LIQUID OR GASEOUS FUEL, WATER-BACKS. Gas or vapor stove structures that are provided with water-backs designed to heat water for domestic purposes.

Search Class—

126—STOVES AND FURNACES, subclasses 39, Stoves, Cooking, Liquid or gaseous fuel, Gas; 44, Stoves, Cooking, Liquid or gaseous fuel, Liquid, Vapor, and 34, Stoves, Cooking, Water-backs for stove and detail water-back features.

54. STOVES, COOKING, LIQUID OR GASEOUS FUEL, WATER-BACKS, COMBINED BURNER AND WATER-BACK. Burner structures that have combined with them integral water-heating means.

55. STOVES, COOKING, COMBINED BASE AND HOT CLOSET. Devices that are designed to support a stove or range from the floor. It is usual to provide the base with what may be termed a warming or hot closet.

Search Class—

126—STOVES AND FURNACES, subclasses 277, Platforms, and 305, Stove-legs, Base-supports.

56. STOVES, CAR. Types of stoves that are specially designed for use on railroad-cars and similar structures.

57. STOVES, CAR, PROTECTIVE CASINGS. Car-stoves where the improvement resides in means to make it safe in case of derailment, collision, or other accident to the car. The means may be an inclosing casing, an automatically-operated closing casing, or automatic means for closing the inlet and outlet openings of the stove.

Search Class—

126—STOVES AND FURNACES, subclass 202, Fenders, Fire screen or Guard.

58. STOVES, HEATING. Includes, broadly, direct-heat radiating stoves that are not provided with air-heating or magazine features.

CLASS 126—Continued.

59. STOVES, HEATING, CAMP. Sheet-metal knock-down type of stoves specially designed for tent heating.

Search Class—

126—STOVES AND FURNACES, subclasses 9, Stoves, Cooking, Knockdown or separable; 65, Stoves, Heating, Sheet-metal, and 66, Stoves, Heating, Sheet-metal, Hot-air.

59.5. STOVES, HEATING, ORCHARD. Portable devices for generating heat or smoke for protecting orchards from frost.

Search Classes—

158—LIQUID AND GASEOUS FUEL BURNERS, when the invention is merely a means for combustion of fluid fuel.

110—FURNACES, where it is merely a means for combustion of solid fuel.

60. STOVES, HEATING, HORIZONTAL BODY. Stoves having elongated fire-boxes or combustion-chambers.

61. STOVES, HEATING, HORIZONTAL BODY, HOT-AIR. Stoves having elongated fire-boxes or combustion-chambers and which are provided with means for heating and circulating a current of air.

62. STOVES, HEATING, OPEN-FRONT. Heat-radiating stoves in which one or more of its side walls are provided with an opening, so as to obtain direct heat radiation from the fire.

Search Class—

126—STOVES AND FURNACES, subclass 120, Fireplaces for analogous devices.

63. STOVES, HEATING, OPEN-FRONT, HOT-AIR. Heat-radiating open-front stoves that are provided with means for heating and circulating a current of air.

64. STOVES, HEATING, PANEL. Heat-radiating stoves where the invention resides in making the walls of earthenware refractory material.

Search Class—

126—STOVES AND FURNACES, subclasses 98, Stoves, Heating, Joints, and 119, Hot-air furnaces, Joints.

65. STOVES, HEATING, SHEET-METAL. Heat-radiating stoves the outer walls of which are formed of sheet metal. These stoves are of the wood-burning type, having generally no separate or distinct fire-pot.

66. STOVES, HEATING, SHEET-METAL, HOT-AIR. Heat-radiating stoves the outer walls of which are formed of sheet metal and which are provided with air heating and circulating features. These stoves are of the wood-burning type, having generally no separate or distinct fire-box.

67. STOVES, HEATING, HOT-AIR. Air heating and circulating heat-radiating stoves that are not more specifically classified and that are not provided with magazines.

68. STOVES, HEATING, HOT-AIR, MAGAZINE. Hot-air heat-radiating stoves that are provided with magazines or self-feeders.

Search Class—

126—STOVES AND FURNACES, Magazine subclasses for detail features of magazine and appropriate subclasses for air-heating features.

69. STOVES, HEATING, HOT-AIR, REVERTIBLE-DRAFT, BASE-HEATING. Hot-air heat-radiating stoves that are provided with means for giving the products a direct or indirect course to the outlet-flue. When the indirect is employed, it heats the base of the stove.

Search Class—

126—STOVES AND FURNACES, subclasses 74, Stoves, Heating, Magazine, Reversible-draft, Base-heating, and 75, Stoves, Heating, Reversible-draft, Base-heating, for reversible-draft features, and appropriate subclasses for air-heating features.

70. STOVES, HEATING, HOT-AIR, INTERNAL AIR-CHAMBER. Hot-air heat-radiating stoves in which the air-heating chamber is located centrally relative to the combustion chamber.

Search Class—

126—STOVES AND FURNACES, subclass 71, Stoves, heating, hot-air, central air-tube, and subclass 183, Heating-drums, and the subclasses thereunder.

71. STOVES, HEATING, HOT-AIR, CENTRAL AIR-TUBE. Hot-air heat-radiating stoves in which the air-tube passes vertically and centrally through the heater.

Search Class—

126—STOVES AND FURNACES, subclasses 70, Stoves, Heating, Hot-air, Internal air-chamber; 71, Stoves, Heating, Hot-air, Tubular air-heaters, and 109, Hot-air furnaces, Tubular air-heaters.

72. STOVES, HEATING, HOT-AIR, TUBULAR AIR-HEATERS. Hot-air heat-radiating stoves that are provided with a series of air-tubes which are passed vertically, horizontally, or diagonally through the combustion-chamber.

Search Class—

126—STOVES AND FURNACES, subclasses 70, Stoves, Heating, Hot-air, Internal air-chamber; 71, Stoves, Heating, Hot-air, Central air-tube, and 109, Hot-air furnaces, Tubular air-heater.

73. STOVES, HEATING, MAGAZINE. Heat-radiating stoves that are provided with magazines or self-feeders that are not provided with air-heating or reversible-draft features.

CLASS 126—Continued.

Search Classes—

- 126—STOVES AND FURNACES, Magazine subclasses for detail magazine features.
- 110—FURNACES, subclass 44, Furnace structure, Progressive feed, Underfeed.

74. STOVES, HEATING, MAGAZINE, REVERTIBLE-DRAFT, BASE-HEATING. Magazine heat-radiating stoves that are provided with a direct or indirect course to the outlet-flue. When the indirect is employed, it heats the base of the stove.

Search Class—

- 126—STOVES AND FURNACES, subclasses 60, Stoves, Heating, Hot-air, Reversible-draft, Base-heating, and 75, Stoves, Heating, Reversible-draft, Base-heating, and subclasses 73 et seq., Magazine, for detail magazine features.

5. STOVES, HEATING, REVERTIBLE-DRAFT, BASE-HEATING. Heat-radiating stoves where means are employed to give a direct or an indirect course to the products. The indirect draft causes the heating of the base.

Search Class—

- 126—STOVES AND FURNACES, subclasses 60, Stoves, Heating, Hot-air, Reversible-draft, Base-heating, and 74, Stoves, Heating, Magazine, Reversible-draft, Base-heating, for reversible-draft features.

76. STOVES, HEATING, DOWNDRAFT. Stoves in which the draft is downward through the fuel.

77. STOVES, HEATING, FEEDING AIR. Devices where the invention resides in means for heating and introducing air to the zone of combustion.

Search Classes—

- 126—STOVES AND FURNACES, subclasses 112, Hot-air furnaces, Feeding air; 146, Fire-pots and linings, Feeding air; 163, Grates, Feeding air; 193, Stove doors and windows, Feeding air, and 15, Stoves, Cooking, Feeding air.
- 110—FURNACES, appropriate Feeding-air subclasses, particularly subclass 72, Furnace structure, feeding air.

75. STOVES, HEATING, FEEDING STEAM. Feeding-steam devices that are specially applicable and structurally related to heating-stoves.

Search Class—

- 110—FURNACES, steam and air feeding subclasses.

79. STOVES, HEATING, SMOKE AND GAS RETURNING. Heating-stoves that are provided with means for returning the gases or products of combustion from the smoke-outlet to the combustion-chamber of the stove.

Search Class—

- 110—FURNACES, particularly subclasses 49, Furnace structure, Smoke and gas return, and 52, Furnace structure, Smoke and gas return, Before passing boiler-flues, From fire-box.

80. STOVES, HEATING, VENTILATING, ATTACHMENTS. Types of heating-stoves that are provided with special ventilating attachments or features.

Search Classes—

- 126—STOVES AND FURNACES, subclasses 21, Stoves, Cooking, Ovens, Ventilated; 84, Stoves, Heating, Liquid or gaseous fuel, Combined heating and ventilating; 198, Stove doors and windows, Oven-doors, Ventilating; 293, Dampers, Stove-pipe, Combined damper and ventilator, and 316, Stovepipe-thimbles, Combined thimble and ventilator.
- 98—PNEUMATICS, subclasses of ventilation.

81. STOVES, HEATING, STOVE-PLATES. Stoves where the invention resides in the form of ornamental and name plates; also, in the means employed for attaching them to the outer surfaces of stove-bodies.

82. STOVES, HEATING, ADJUSTABLE PIPE-COLLAR. Stoves in which the invention resides in the back plate carrying the pipe-collar, and which is capable of variable adjustments relative to the flue-opening.

Search Class—

- 126—STOVES AND FURNACES, subclass 315, Stovepipe-thimbles, Adjustable flue-collar.

83. STOVES, HEATING, DEFLECTOR-PLATE. Stoves where the improvement consists in the form and arrangement of retarding-plates for the products of combustion, so as to give them a circuitous course to the exit-flue.

84. STOVES, HEATING, LIQUID OR GASEOUS FUEL, COMBINED HEATING AND VENTILATING. Liquid and gaseous fuel heating-stoves that are structurally adapted to both heat and ventilate the room in which they are located.

Search Class—

- 126—STOVES AND FURNACES, subclasses 80, Stoves, Heating, Ventilating attachments; 94, Stoves, Heating, Liquid or gaseous fuel, Liquid, Flue-connected; 97, Stoves, Heating, Liquid or gaseous fuel, Liquid, Wick, Heating and illuminating

85. STOVES, HEATING, LIQUID OR GASEOUS FUEL, GAS. Gas heating-stoves that do not fall under more specific subclasses.

86. STOVES, HEATING, LIQUID OR GASEOUS FUEL, GAS, OPEN-FRONT. Open-front heaters that are adapted for the burning of gaseous fuel.

Search Class—

- 126—STOVES AND FURNACES, subclasses 62, Stoves, Heating, Open-front; 63, Stoves, Heating, Open-front, Hot-air, and 97, Stoves, Heating, Liquid or gaseous fuel, Liquid, Wick, Heating and illuminating.

CLASS 126—Continued.

87. STOVES, HEATING, LIQUID OR GASEOUS FUEL, GAS, OPEN-FRONT, ASBESTOS FIREBACK. Gas-heating open-front stoves where the back plate or wall is provided with asbestos fiber and adapted to be heated to incandescence by gaseous-fuel burners.

88. STOVES, HEATING, LIQUID OR GASEOUS FUEL, GAS, OPEN-FRONT, ASBESTOS-FIREBACK, HOT-AIR. Gas open-front asbestos-fireback stoves that are provided with specific air-heating features.

Search Class—

- 126—STOVES AND FURNACES, subclass 128, Fireplaces, Liquid or gaseous fuel, Asbestos fireback.

89. STOVES, HEATING, LIQUID OR GASEOUS FUEL, GAS, OPEN-FRONT, HOT-AIR. Gas open-front heating-stoves that are provided with specific air-heating features.

90. STOVES, HEATING, LIQUID OR GASEOUS FUEL, GAS, HOT-AIR. Gas heating-stoves that are provided with various forms of air-heating means.

91. STOVES, HEATING, LIQUID OR GASEOUS FUEL, GAS, RADIATOR TYPE. Gas heating-stoves that have the structural form of tubular radiators.

Search Classes—

- 126—STOVES AND FURNACES, subclass 183, Heating-drums, and the subclasses thereunder for stove structural features.

- 219—ELECTRIC HEATING AND RHEOSTATS, subclass 34, Heaters, Radiators.

92. STOVES, HEATING, LIQUID OR GASEOUS FUEL, GAS, INCANDESCENT FIRE-GRATE. Devices that are adapted to receive or hold substances which are heated to incandescence by gas or similar burners. These devices are usually employed in fireplaces or in open-front heaters.

Search Classes—

- 126—STOVES AND FURNACES, subclasses 86, Stoves, Heating, Liquid or gaseous fuel, Gas, Open-front, and 87, Stoves, Heating, Liquid or gaseous fuel, Gas, Open-front, Asbestos fireback.

- 67—ILLUMINATING BURNERS, subclass 88, Gaseous fuel burners, Incandescent, and the subclasses thereunder.

93. STOVES, HEATING, LIQUID OR GASEOUS FUEL, LIQUID. Types of heating-stoves that are structurally adapted for the burning of liquid fuel.

94. STOVES, HEATING, LIQUID OR GASEOUS FUEL, LIQUID, FLUE-CONNECTED. Liquid-fuel heating stoves that are provided with means for connecting them with chimney or flue openings.

Search Class—

- 126—STOVES AND FURNACES, subclass 84, Stoves, Heating, Liquid or gaseous fuel, Combined heating and ventilating.

95. STOVES, HEATING, LIQUID OR GASEOUS FUEL, LIQUID, VAPOR. Liquid-fuel heating-stoves that are provided with liquid-fuel retort vapor-burners.

96. STOVES, HEATING, LIQUID OR GASEOUS FUEL, LIQUID, WICK. Liquid-fuel heating-stoves that are of the wick type and those that are provided with specific air-heating features. These devices are usually termed "lamp-stoves."

97. STOVES, HEATING, LIQUID OR GASEOUS FUEL, LIQUID, WICK, HEATING AND ILLUMINATING. Liquid-fuel wick type in which the stove proper is provided with an open front and adapted to receive an illuminating-lamp as the heater.

Search Class—

- 126—STOVES AND FURNACES, subclasses 62, Stoves, Heating, Open-front, and 294, Foot-warmers for detail stove features; also subclass 248, Heaters, Liquid or gaseous fuel, Attachments, Drum, and the other subclasses involving drum features in this group.

98. STOVES, HEATING, JOINTS. Stoves in which the invention resides in the structural features of stove-joints.

Search Class—

- 126—STOVES AND FURNACES, subclasses 64, Stoves, Heating, Panel, and 119, Hot-air furnaces, Joints.

99. HOT-AIR FURNACES. Furnaces which heat air in an inclosing case or jacket to be distributed to points remote from the furnace.

100. HOT-AIR FURNACES, COMBINED FURNACE AND COOKING-STOVE. Air-heating furnaces that are provided with cooking-stove or oven attachments.

101. HOT-AIR FURNACES, COMBINED FURNACE AND STEAM OR WATER. Combined hot-air, steam, or water heaters, generally known in the art as "hot-air furnaces, steam."

102. HOT-AIR FURNACES, CIRCULAR RADIATING-DRUM. Furnaces in which the radiating drum encircles the fire-pot or combustion-chamber.

103. HOT-AIR FURNACES, DOWNDRAFT. Air-heating furnaces in which the products of combustion are caused to pass in a downward direction through the flue.

104. HOT-AIR FURNACES, HORIZONTAL COMBUSTION-CHAMBER. Air-heating furnaces which are provided with horizontal or elongated fire-boxes or combustion-chambers.

CLASS 126—Continued.

- Search Class—**
126—STOVES AND FURNACES, subclasses 60, Stoves, Heating, Horizontal body; 61, Stoves, Heating, Horizontal body, Hot-air, and 108, Hot-air furnaces, Secondary heating-chamber horizontally arranged.
105. **HOT-AIR FURNACES, HOT-AIR EQUALIZERS.** Devices for equally distributing heated air to the several apartments of a building.
106. **HOT-AIR FURNACES, INTERNAL AIR-CHAMBER.** Air-heating furnaces in which an air-heating chamber is centrally situated as respects the combustion-chamber and provided with passages which connect the chamber with the space formed by the inclosing case or jacket.
- Search Class—**
126—STOVES AND FURNACES, subclasses 70, Stoves, Heating, Hot-air, Internal air-chamber; 71, Stoves, Heating, Hot-air, Central air-tube; and 109, Hot-air furnaces, Tubular air-heater.
107. **HOT-AIR FURNACES, MAGAZINE.** Air-heating furnaces that are provided with magazines or self-feeders.
- Search Class—**
110—FURNACES, subclass 44, Furnace structure, Progressive-feed, Underfeed.
108. **HOT-AIR FURNACES, SECONDARY HEATING-CHAMBER HORIZONTALLY ARRANGED.** Air-heating furnaces in which the radiating devices are located at the rear of the furnace proper and within the air-casing.
- Search Class—**
126—STOVES AND FURNACES, subclasses 104, Hot-air furnaces, Horizontal combustion-chamber; 186, Heating-drums, Portable heat-radiators; and 187, Heating-drums, Portable heat-radiators, Hot-air.
109. **HOT-AIR FURNACES, TUBULAR AIR-HEATER.** Air-heating furnaces which have air-tubes passed vertically, horizontally, or diagonally through the combustion-chamber and which communicate with the space formed by the inclosing case or jacket.
- Search Classes—**
126—STOVES AND FURNACES, subclasses 71, Stoves, Heating, Hot-air, Central air-tube; 72, Stoves, Heating, Hot-air, Tubular air-heaters; and 106, Hot-air furnaces, Internal air-chamber.
98—PNEUMATICS, subclasses 25, Ventilation, Flue-heaters, and 27, Ventilation, House.
110. **HOT-AIR FURNACES, COMPRESSED-AIR.** Heaters for heating air under compression, as distinguished from devices for compressing the air to heat it.
111. **HOT-AIR FURNACES, DOUBLE FIRE-POT.** Air-heating furnaces that are provided with two or more firepots and structural features by which the fire-pots are capable of separate or joint use.
- Search Classes—**
126—STOVES AND FURNACES, subclass 2, Stoves, Cooking, Double fire-pot.
110—FURNACES, subclass 27, Furnace structure, Double fire-box, Alternate smoke-return, Under fire.
112. **HOT-AIR FURNACES, FEEDING AIR.** Air-heating furnaces where the invention resides in the form and arrangement of devices for heating and introducing air into the combustion-chamber.
- Search Classes—**
126—STOVES AND FURNACES, subclasses 15, Stoves, Cooking, Feeding air; 77, Stoves, Heating, Feeding air; 78, Stoves, Heating, Feeding steam; 146, Fire-pots and linings, Feeding air; and 193, Stove doors and windows, Feeding air.
110—FURNACES, subclasses 72, Furnace structure, Feeding air, and 158, Draft-regulators, Smoke-box, Feeding air, Door-operated.
113. **HOT-AIR FURNACES, AIR-MOISTENERS.** Air-heating furnaces where the invention resides in the form and arrangement of the water-pan, the vapor from which moistens the air heated by the furnace.
114. **HOT-AIR FURNACES, CASINGS.** Structure and arrangement of the inclosing furnace-casing.
- Search Class—**
126—STOVES AND FURNACES, subclass 117, Hot-air furnaces, Preliminary air-heater.
115. **HOT-AIR FURNACES, DUST-FLUE.** Air-heating furnaces that are provided with means for conveying the dust resultant from raking the fire to the smoke-pipe or fire-pot.
116. **HOT-AIR FURNACES, LIQUID OR GASEOUS FUEL.** Hot-air furnaces in which the heating agent is either a liquid or gaseous fuel burner or combined coal and liquid or gaseous fuel burner. Also attachments independent of the main furnace, but connected thereto, also floor-register attachments.
- Search Class—**
126—STOVES AND FURNACES, subclass 325, Hot-air registers, for register features.
117. **HOT-AIR FURNACES, PRELIMINARY AIR-HEATER.** Devices for heating the air before it is conveyed to the space formed by the surrounding jacket or casing of a furnace.
- Search Class—**
126—STOVES AND FURNACES, subclass 114, Hot-air furnaces, Casings.

CLASS 126—Continued.

118. **HOT-AIR FURNACES, RADIATING-FLANGES.** Air-heating furnaces where the invention resides in the form and arrangement of flanges or pins which are attached to furnace sections and drums for increasing their radiating-surfaces.
- Search Class—**
237—HEAT-DISTRIBUTING SYSTEMS.
119. **HOT-AIR FURNACES, JOINTS.** Air-heating furnaces where the invention resides in the structure of the joints of the furnace or casing.
- Search Class—**
126—STOVES AND FURNACES, subclasses 64, Stoves, Heating, panel, and 98, Stoves, Heating, Joints.
120. **FIREPLACES.** Fireplaces wherein the improvements reside in the structural form of or the relation of fuel structures to the fireplace.
- Search Class—**
126—STOVES AND FURNACES, subclasses 120 et seq. under Fireplace structures for detail features; also subclass 288, Dampers, Fireplace.
121. **FIREPLACES, HOT-AIR.** Fireplace structures that are provided with air-heating features and designed to discharge the heated air into the room in which the fireplace is located.
- Search Class—**
126—STOVES AND FURNACES, subclasses under Fireplace for detail features.
122. **FIREPLACES, HOT-AIR, TWO-ROOM HEATERS.** Fireplaces that are structurally designed to heat air and means for conducting the heated air to a room or rooms distant from that in which the fireplace is located.
- Search Class—**
126—STOVES AND FURNACES, subclasses 61, Stoves, Heating, Horizontal body, Hot-air; 66, Stoves, Heating, Sheet-metal, Hot-air; 67, Stoves, Heating, Hot-air; and 80, Stoves, Heating, Ventilating attachments.
123. **FIREPLACES, HOT-AIR, STOVE STRUCTURE.** Air heaters that are designed to be placed in fireplace-openings and are in themselves complete structures and separable or removable from the fireplace-opening. Some of these devices are known as "latrobes."
124. **FIREPLACES, HOT-AIR, STOVE STRUCTURE, MAGAZINE.** Fireplace hot-air stove-structures that are provided with magazines or coal-feeders. These devices are commonly known as "latrobes."
- Search Class—**
126—STOVES AND FURNACES, subclasses 69, Stoves, Heating, Hot-air, Reversible draft, Base-heating; 74, Stoves, Heating, Magazine, Reversible draft, Base-heating; and 75, Stoves, Heating, reversible draft, Base-heating for reversible-draft features.
125. **FIREPLACES, TWO-ROOM DIRECT RADIATION.** Heating devices of the open-front type that are placed in walls or partitions of buildings and designed to heat adjoining rooms. Many of these devices are of the revolving type.
- Search Class—**
126—STOVES AND FURNACES, subclasses of Stove structure for detail stove features; and subclass 3, Stoves, Cooking, Double firepot, Cooking and heating.
126. **FIREPLACES, STOVE STRUCTURE.** Stove structures designed to be employed in connection with fireplace-openings.
- Note.—See Stove-structure fireplaces, Hot-air, in this class, and search should also be made in appropriate Stove subclasses for details.
127. **FIREPLACES, LIQUID OR GASEOUS FUEL.** Fireplaces and stove structures designed to be placed in fireplaces adapted to the burning of liquid or gaseous fuel.
128. **FIREPLACES, LIQUID OR GASEOUS FUEL, ASBESTOS FIREBACK.** Asbestos firebacks of the liquid or gaseous fuel type that are designed to be placed in fireplace-openings, the asbestos being heated to incandescence for heat-radiating purposes.
- Search Class—**
126—STOVES AND FURNACES, subclass 88, Stoves, Heating, Liquid or gaseous fuel, Gas, Open-front, Asbestos fireback, Hot-air.
129. **FIREPLACES, LIQUID OR GASEOUS FUEL, ASBESTOS FIREBACK, HOT-AIR.** Asbestos-fireback liquid or gaseous fuel fireplaces provided with air-heating means.
130. **FIREPLACES, FIREBACKS.** The form or character of the back wall or lining of fireplaces.
- Search Class—**
126—STOVES AND FURNACES, subclass 144, Firepots and linings, and the subclasses thereunder, and in subclass 120 et seq., Fireplaces generally, for details.
131. **FIREPLACES, FIREBACKS, HOT-AIR.** Firebacks or linings that are designed for air-heating purposes.
- Search Class—**
126—STOVES AND FURNACES, subclass 121, Fireplaces, Hot-air, and general Air-heating subclasses.
132. **FIREPLACES, WATER-BACKS.** Fireplace-heaters that are provided with water or steam generating backs and designed to be connected up to heat-radiators in distant rooms.
- Search Class—**
237—HEAT DISTRIBUTING SYSTEMS, subclass 2, Air, steam, or water.

CLASS 126—Continued.

133. FIREPLACES, WATER-BACKS, LIQUID OR GASEOUS FUEL. Fireplace water-backs that are heated by liquid or gaseous fuel burners.
Search Class—
 237—HEAT-DISTRIBUTING SYSTEMS, subclass 6 et seq., for local heating systems.
134. FIREPLACES, AIR-MOISTENING ATTACHMENTS. Air-moistening devices that are designed to be attached to fireplaces or open-front heaters.
Search Classes—
 126—STOVES AND FURNACES, subclasses 113, Hot-air furnaces, Air-moisteners, and 313, Stovepipes, Air-moistening attachments.
 98—PNEUMATICS, subclass 39, Ventilation, air moistening, cooling, and cleansing, and the subclasses thereunder for details.
135. FIREPLACES, BLOWERS. Blowers wherein the invention resides in the form or means for attaching them to the fire-place opening or grate and designed to promote and regulate the draft. The roll type are included in this subclass, and means for operating it.
Search Classes—
 126—STOVES AND FURNACES, subclasses 140, Fireplaces, Fronts, grate-closure; 190, Stove doors and windows, and 191, Stove doors and windows, Balanced.
 20—WOODEN BUILDINGS, subclass 20, Doors, Sliding, Jointed.
 189—METALLIC BUILDING STRUCTURES, subclasses 80, Fire-shields, and 81, Fire-shields, Collapsible.
 75—METALLURGY, subclass 196, Shields.
136. FIREPLACES, BLOWERS, STOVE STRUCTURE. Blowers that are designed to close, promote, and regulate the draft in open-front stoves; includes those that are permanently fixed to the stove and means for operating them.
Search Class—
 126—STOVES AND FURNACES, subclass 140, Fireplaces, Fronts, Grate-closure.
137. FIREPLACES, COOKING AND OVEN ATTACHMENTS. Improvements in adapting a fireplace for or providing it with cooking and oven attachments.
Search Class—
 126—STOVES AND FURNACES, subclass 336, Stove-shelves, Fire-place-grate.
138. FIREPLACES, FRONTS. Miscellaneous devices that relate to fireplace-fronts.
Search Class—
 126—STOVES AND FURNACES, subclass 137, Fireplaces, Cooking and oven attachments.
139. FIREPLACES, FRONTS, FRAMES. Limited to the frames surrounding the fireplace-opening and means for attaching them to the chimney-breast.
Search Class—
 126—STOVES AND FURNACES, subclass 140, Fireplaces, Fronts, Grate-closure.
140. FIREPLACES, FRONTS, GRATE-CLOSURE. Devices that are designed to close fireplace-openings and open-front stoves and are in effect "summer fronts."
Search Class—
 126—STOVES AND FURNACES, subclasses 135, Fire-places, Blowers; 136, Fire-places, Blowers, Stove structure, and 139, Fire-places, Fronts, Frames.
141. FIREPLACES, FRONTS, HEAT-REFLECTOR. Devices that are designed to reflect or throw the heat into the room in which the fireplace or open-front stove is located.
142. FIREPLACES, FRONTS, HOODS. Fireplace or open-front heaters provided with hoods to collect the ascending smoke and gases, thereby preventing its escape into the room.
Search Class—
 126—STOVES AND FURNACES, subclass 127, Fireplaces, Liquid or gaseous fuel, and the subclasses thereunder.
143. FIREPLACES, HEARTHS. Improvements in fireplace bases or hearths. Included in this subclass are air-feeding and ventilating hearth features.
Search Class—
 126—STOVES AND FURNACES, subclasses 203, Fenders, Fireplace-hearth, and 279, Platforms, Stove-boards, Ventilating.
144. FIRE POTS AND LININGS. Miscellaneous fire-pots and linings.
Search Classes—
 110—FURNACES, subclasses 75, Furnace structure, Feeding air, Fire-box, and 86, Furnace structure, Fire-box.
 126—STOVES AND FURNACES, subclass 154, Grates, Adjustable, Vertically.
145. FIRE-POTS AND LININGS, ADJUSTABLE. Fire-pot and lining structures adapted to be adjusted so as to fit stoves of various sizes; includes linings that are provided with breakable grooves.
Search Classes—
 126—STOVES AND FURNACES, subclasses 151, Fire-pots and linings, Sectional, and 153, Grates, Adjustable.
 110—FURNACES, subclass 89, Furnace structure, Fire-box, Adjustable.
146. FIRE-POTS AND LININGS, FEEDING AIR. Fire-pots that are provided with air-feeding means.
Search Class—
 126—STOVES AND FURNACES, subclasses 15, Stoves, Cooking, Feeding air; 77, Stoves, Heating, Feeding air, and 112, Hot-air furnaces, Feeding air.

CLASS 126—Continued.

147. FIRE-POTS AND LININGS, DIVIDED. Fire-pots that are provided with means to divide them or adjust the fuel capacity of the fire-pot.
Search Class—
 126—STOVES AND FURNACES, subclasses 25, Stoves, Cooking, Summer, and the subclasses thereunder, and 154, Grates, Adjustable, Vertically.
148. FIRE-POTS AND LININGS, FIRE-PLATE. Fire-pots that are provided with plates to limit or confine the fuel-space, and thereby regulate the combustion.
149. FIRE-POTS AND LININGS, ROTARY, HORIZONTAL AXIS. Fire-box structures adapted to inclose the fuel, whereby the fire box can be given a complete rotation on a horizontal axis.
Search Class—
 126—STOVES AND FURNACES, subclass 181, Grates, Rotary, Horizontal axis.
150. FIRE-POTS AND LININGS, ROTARY, VERTICAL AXIS. Fire-pots that are provided with means for imparting to the fire-pot a complete rotation on a vertical axis.
Search Class—
 126—STOVES AND FURNACES, subclass 170, Grates, Oscillatory, Vertical axis.
151. FIRE-POTS AND LININGS, SECTIONAL. Fire-pot structures where the improvement resides in the sectional features and the arrangement of the parts.
Search Class—
 126—STOVES AND FURNACES, subclass 145, Fire-pots and linings, Adjustable.
152. GRATES. Furnace, stove, and range grates that do not fall under more specific subclasses. Grates and the subclasses thereunder are designed to include all grate structures *per se* that are of general application to furnaces and stoves.
 Note.—For grates that are adapted to specific applications of the heat of combustion search should be made in the class including such applications.
Search Classes—
 126—STOVES AND FURNACES, subclass 164, Grates, Fireplace.
 110—FURNACES, subclass 33, Furnace structure, Progressive feed, Grate, and the subclasses thereunder.
153. GRATES, ADJUSTABLE. Grates adapted to fit different-sized fire-pots.
Search Classes—
 126—STOVES AND FURNACES, subclass 144, Fire-pots and linings.
 110—FURNACES, subclass 89, Furnace structure, Fire-box, Adjustable.
154. GRATES, ADJUSTABLE, VERTICALLY. Grates adapted to vertical adjustment.
Search Class—
 126—STOVES AND FURNACES, subclass 159, Grates, Agitating, Pocket.
155. GRATES, AGITATING. Miscellaneous grates adapted to be shaken or agitated for the clearance of ashes.
Search Class—
 126—STOVES AND FURNACES, subclass 176, Grates, Rooking-bar, and the subclasses thereunder.
156. GRATES, AGITATING, ALTERNATE ENDS. Agitating-grates that are provided with means for imparting vibrating or rocking motion in opposite directions to adjacent grate-bars.
Search Class—
 126—STOVES AND FURNACES, subclass 176, Grates, Rooking-bar, and the subclasses thereunder.
157. GRATES, AGITATING, ALTERNATE BAR. Agitating-grates that are constructed with alternate immovable and movable grate-bars and means for imparting vertical motion to the alternate movable bars.
Search Class—
 126—STOVES AND FURNACES, subclass 173, Grates, Raking attachments.
158. GRATES, AGITATING, DUMPING. Agitating-grates that are provided with dumping means or sections.
Search Class—
 126—STOVES AND FURNACES, subclasses 162, Grates, Dumping; 171, Grates, Oscillatory, Vertical axis, Dumping-section, and 177, Grates, Rooking-bar, Dumping.
159. GRATES, AGITATING, POCKET. Agitating-grates that are provided with means for giving a varying depth to the fuel over the grate-surface. The means employed are usually pockets or depressions in the grate-surface.
Search Class—
 126—STOVES AND FURNACES, subclass 154, Grates, Adjustable, Vertically.
160. GRATES, CLOSURES. Grates provided with means for regulating the grate-openings, whereby the draft may be full, reduced, or closed.
161. GRATES, CUT-OFF. Grates provided with means closely related to the grate structure for retaining a portion of the fuel in the fire-pot, thus permitting the removal of the bottom portion or ash.
Search Classes—
 126—STOVES AND FURNACES, subclass 166, Grates, Fuel cut-off.
 110—FURNACES, subclasses 117, Fuel-feeders, Chute, Door, Multiple charge, and 118, Fuel-feeders, Vertical-drop.

CLASS 126—Continued.

162. **GRATES, DUMPING.** Grate structures that are provided with special dumping means.
- Search Class—**
110—FURNACES, subclass 33, Furnace structure, Progressive-feed, Grate, and the subclasses thereunder.
163. **GRATES, FEEDING AIR.** Grates provided with airfeeding features.
- Search Classes—**
126—STOVES AND FURNACES, subclasses 15, Stoves, Cooking, feeding air; 77, Stoves, Heating, Feeding air, and 146, Fire-pots and linings, Feeding air.
110—FURNACES, subclasses 74, Furnace structure, Feeding air, Hollow grate; 75, Furnace structure, Feeding air, Fire-box, and 182, Door casings and arches, Feeding air.
164. **GRATES, FIREPLACE.** Grates specially adapted for use in fireplace-openings or open-front stoves; may involve fireplace-structure in combination with the grate.
- Note.**—Specific grate structures should be searched in appropriate grate subclasses. However, the type of grates disclosed in the main class of grates is more analogous to the type found in this subclass.
- Search Class—**
126—STOVES AND FURNACES, subclass 120, Fireplaces, and subclasses thereunder.
165. **GRATES, FIREPLACE, BASKET.** Fireplace-grates that are in the form of basket fuel-holders, are designed to rest upon the fireplace-hearth and are independent in structure from the fireplace.
166. **GRATES, FUEL CUT-OFF.** Devices that are designed to be passed through or inserted in the fuel above the grate in order to sustain the main body of the fuel, and thus permit of the removal of ashes and cinders. These devices are independent of the fuel-support or grate.
- Search Class—**
126—STOVES AND FURNACES, subclass 161, Grates, Cut-off.
167. **GRATES, GRATE-BAR.** Grate-bars where the improvement resides wholly or solely in the form of the bar. These bars are known as stationary or immovable.
- Search Class—**
126—STOVES AND FURNACES, subclass 179, Grates, Rocking-bar, Grate-bar.
168. **GRATES, GRATE-BAR, REMOVABLE FUEL-SUPPORT.** Grate-bars that are provided with removable fuel-supporting devices.
- Search Class—**
126—STOVES AND FURNACES, subclass 180, Grates, Rocking-bar, Grate-bar, Removable fuel-support.
169. **GRATES, OPERATING MECHANISM.** Devices designed for the operation or moving of the grates and grate-bar structures in general.
- Search Class—**
110—FURNACES, subclass 32, Furnace structure, Progressive-feed, and the subclasses thereunder.
170. **GRATES, OSCILLATORY, VERTICAL AXIS.** Grates arranged horizontally on a vertical axis and adapted to be given a to-and-fro motion. These structures are sometimes termed "rotary."
- Search Class—**
126—STOVES AND FURNACES, subclass 150, Fire-pots and linings, Rotary, Vertical axis.
171. **GRATES, OSCILLATORY, VERTICAL AXIS, DUMPING-SECTION.** Oscillating grates that are provided with a pivoted dumping section or sections.
172. **GRATES, OSCILLATORY, VERTICAL AXIS, SLIDING SECTION.** Oscillating grates that are provided with a sliding ash-discharge section.
- Search Class—**
126—STOVES AND FURNACES, subclasses 152, Grates, and 164, Grates, Fireplace.
173. **GRATES, RAKING ATTACHMENTS.** Attachments to grates designed to rake and free the grate from ashes and clinkers. As a rule these devices are inseparable from the grate structure.
- Search Classes—**
148—GAS, HEATING AND ILLUMINATING, subclass 88, Generators, Cupola, Stirrer.
110—FURNACES, subclass 37, Furnace structure, Progressive-feed, Grate, Raking-bar.
174. **GRATES, RECIPROCATING.** Grates structurally designed to be given a horizontal to-and-fro end movement, as distinguished from the oscillatory or rotary type.
- Search Classes—**
126—STOVES AND FURNACES, subclasses 152, Grates; 164, Grates, Fireplace, and 172, Grates, Oscillatory, Vertical axis, Sliding section.
110—FURNACES, subclass 38, Furnace structure, Progressive-feed, Reciprocating-bar.
175. **GRATES, RECIPROCATING, ALTERNATE BAR.** Reciprocating grates where the alternate bars are given an opposite to-and-fro end movement or where the bars are moved in reverse horizontal direction.

CLASS 126—Continued.

176. **GRATES, ROCKING-BAR.** Horizontally-pivoted grates and grate-bars provided with means for giving them a to-and-fro or rocking motion, but not adapted to be given a complete rotation or revolution.
- Search Classes**
126—STOVES AND FURNACES, subclasses 164, Grates, Fireplace, and 181, Grates, Rotary, Horizontal axis.
110—FURNACES, subclasses 33, Furnace structure, Progressive-feed, Grate, and 39, Furnace structure, Progressive-feed, Grate, Rocking-bar.
177. **GRATES, ROCKING-BAR, DUMPING.** Rocking-bar grates that are provided with dumping means or dumping-sections.
- Search Class—**
110—FURNACES, subclass 39, Furnace structure, Progressive-feed, Grate, Rocking-bar.
178. **GRATES, ROCKING-BAR, DUPLEX.** Rocking-bar grates where different fuel-supporting faces may be employed; includes grates designed for the burning of coal or wood, combining coal and wood bearing faces.
- Search Class—**
126—STOVES AND FURNACES, subclasses 152, Grates, for wood-burning grates, and 181, Grates, Rotary, Horizontal axis.
179. **GRATES, ROCKING-BAR, GRATE-BAR.** Rocking-bar grates where the improvement resides wholly in the form or character of the rocking bar.
- Search Classes—**
126—STOVES AND FURNACES, appropriate subclasses under Grates, Grate-bar.
110—FURNACES, appropriate subclasses under Furnace structure, Progressive-feed, Grates.
180. **GRATES, ROCKING-BAR, GRATE-BAR, REMOVABLE FUEL-SUPPORT.** Rocking grate-bars provided with removable fuel-bearing faces.
- Search Classes—**
126—STOVES AND FURNACES, subclass 168, Grates, Grate-bar, Removable fuel-support.
110—FURNACES, subclass 33, Furnace structure, Progressive-feed, Grate, and appropriate subclasses thereunder.
181. **GRATES, ROTARY HORIZONTAL AXIS.** Bars that are horizontally pivoted and are structurally adapted to be given a complete rotary motion; also, means for imparting this motion.
- Search Classes—**
126—STOVES AND FURNACES, subclasses 149, Fire-pots and linings, Rotary, Horizontal axis, and 176, Grates, Rocking-bar.
110—FURNACES, subclass 35, Furnace structure, Progressive-feed, Grate, Rotary, Horizontal axis.
182. **GRATES, ROTARY, VERTICAL AXIS.** Grates that are horizontally arranged, mounted upon a vertical pivot, and means for imparting to the grate a full and complete revolution upon its axis or pivot.
- Search Classes—**
126—STOVES AND FURNACES, subclasses 170 et seq., Grates, Oscillatory, and 150, Fire-pots and linings, Rotary, Vertical axis.
110—FURNACES, subclass 36, Furnace structure, Progressive-feed, Grate, Rotary, Vertical axis.
183. **HEATING-DRUMS.** Heat-radiating devices that are adapted to utilize the waste heat and products of combustion from stoves, furnaces, and similar structures and that are not classifiable in more specific subclasses.
- Search Classes—**
126—STOVES AND FURNACES, subclass 248, Heaters, Liquid or gaseous fuel, Attachments, Drum.
110—FURNACES, subclasses 110, Fuel-feeders, Hopper, Pusher, Screw; 119, Spark-arresters, and 138, Spark-arresters, Stack, Spiral Baffle, Stationary.
184. **HEATING-DRUMS, AIR-HEATING ATTACHMENTS.** Devices adapted to be heated by stoves and similar structures and to utilize waste heat and products of combustion.
185. **HEATING-DRUMS, CHIMNEY ATTACHMENTS.** Heat-radiators designed to receive waste heat and products of combustion from chimney-flues, including those that have air-heating features.
186. **HEATING-DRUMS, PORTABLE HEAT-RADIATORS.** Heating drums that are portable in character and designed to receive waste heat and products of combustion from any form of combustion apparatus.
187. **HEATING-DRUMS, PORTABLE HEAT-RADIATORS, HOT-AIR.** Portable heat-radiators that are provided with air-heating features.
- Search Class—**
126—STOVES AND FURNACES, subclass 185, Heating-drums, Chimney attachments.
188. **HEATING-DRUMS, STOVEPIPE.** Enlargements of the stovepipe forming one section thereof adapted to utilize the heat of combustion products passing therethrough.
189. **HEATING-DRUMS, STOVEPIPE, HOT-AIR.** Stovepipe-drums that are provided with specified forms of air-heating features.

CLASS 126—Continued.

190. STOVE DOORS AND WINDOWS. Miscellaneous stove doors and windows applicable to heating and cooking stoves.
Search Class—
 110—FURNACES, subclass 173, Doors.
191. STOVE DOORS AND WINDOWS, BALANCED. Doors that are provided with weights or springs designed to aid in opening or closing the door; also, to prevent the sudden closing of the door.
Search Class—
 110, FURNACES, subclass 173, Doors.
192. STOVE DOORS AND WINDOWS, DOOR-OPERATOR. Door opening or closing devices. Devices known in the art as "kicker-latches."
Search Class—
 126—STOVES AND FURNACES, subclass 197, Stove doors and windows, Latches, Combined latch and operator.
 39—FENCES, subclass 5, Gates.
 110—FURNACES, subclass 178, Doors, Operators, Pedal.
193. STOVE DOORS AND WINDOWS, FEEDING AIR. Doors designed to admit a current of air into the combustion chamber above the fuel-level. In some instances the object sought is to prevent the blackening of the transparent door-panel.
Search Classes—
 126—STOVES AND FURNACES, subclasses 198, Stove doors and windows, Oven-doors, Ventilating; 285, Dampers, and the several Feeding-air subclasses.
 110—FURNACES, subclass 175, Doors, Feeding air.
194. STOVE DOORS AND WINDOWS, HINGES. Hinges that are peculiarly applicable to domestic stoves and furnaces.
Search Class—
 16—BUILDERS' HARDWARE, subclass 11, Hinges.
 110—FURNACES, subclass 173, Doors.
195. STOVE DOORS AND WINDOWS, KNOBS. Knobs that are provided with means for air circulation.
 Note.—For knobs generally search should be made in appropriate subclasses under class 16, BUILDERS' HARDWARE, subclass 10, Handles, and in class 70, LOCKS AND LATCHES, subclass 10, Knobs.
196. STOVE DOORS AND WINDOWS, LATCHES. Stove or furnace door latches.
Search Class—
 70—LOCKS AND LATCHES, subclasses under Locks and also under Latches.
197. STOVE DOORS AND WINDOWS, LATCHES, COMBINED LATCH AND OPERATOR. The title is self-explanatory.
Search Classes—
 126—STOVES AND FURNACES, subclass 192, Stove doors and windows, Door-operator.
 70—LOCKS AND LATCHES, subclasses under Locks and also under Latches.
198. STOVE DOORS AND WINDOWS, OVEN-DOORS, VENTILATING. Oven-doors provided with means for ingress and egress of air.
Search Class—
 126—STOVES AND FURNACES, subclasses 21, Stoves, Cooking, Ovens, Ventilated, and 193, Stove doors and windows, Feeding air.
199. STOVE DOORS AND WINDOWS, THERMOMETER ATTACHMENTS. Means for securing thermometers to stove-doors, the particular structure of the thermometer not being involved.
Search Class—
 73—MEASURING INSTRUMENTS, under appropriate subclasses for thermometer features.
200. STOVE DOORS AND WINDOWS, TRANSPARENT-PANEL. Doors that have a glass or mica panel therein.
 Note.—This subclass does not include illuminating devices in bakers' ovens and similar devices or what is known in the art as "peep-holes."
Search Class—
 126—STOVES AND FURNACES, subclasses 193, Stove doors and windows, Feeding air; 199, Stove doors and windows, Thermometer attachments, and 213, Stove lids and tops, Illuminating.
201. FENDERS. Miscellaneous guards and protectors. In this subclass will be found stove foot rails or guards.
Search Class—
 126—STOVES AND FURNACES, subclasses 202, Fenders, Fire screen or guard, and 298, Fire-dogs.
202. FENDERS, FIRE SCREEN OR GUARD. Devices that are designed to screen and guard stove and fireplace openings.
Search Class—
 126—STOVES AND FURNACES, subclasses 57, Stoves, Car, Protective casings, and 302, Stove-hoods, Stovepipe-discharge, Stove casing.
203. FENDERS, FIREPLACE-HEARTH. Devices designed to protect the floor from falling embers or cinders, and separable from or independent of the fireplace structure.
Search Class—
 126—STOVES AND FURNACES, subclass 143, Fireplaces, Hearths.

CLASS 126—Continued.

204. FOOT-WARMERS. Miscellaneous body, hand, and foot warmers.
Search Class—
 126—STOVES AND FURNACES, subclasses 56, Stoves, Car, and 261, Heaters, Lunch, for chemical or lime heaters.
205. FOOT-WARMERS, BED-HEATERS. Heaters adapted for heating beds, and analogous devices.
Search Class—
 4—BATHS AND CLOSETS, subclass 5, Closet-cisterns.
 5—BEDS, subclasses 1, Beds, Air, and 12, Bedsteads, Invalid.
206. FOOT-WARMERS, COMPOSITION-FUEL. Foot-warmers structurally adapted to burn composition fuel, notably what is known in the art as "Japanese punk."
207. FOOT-WARMERS, HEATED-BLOCK. Foot-warmers structurally adapted to be heated by a hot blank, such as iron, soapstone, and similar substances.
Search Class—
 126—STOVES AND FURNACES, subclass 246, Heaters, Dish.
208. FOOT-WARMERS, LIQUID OR GASEOUS FUEL. Foot-warmers structurally adapted for the burning of liquid or gaseous fuel.
Search Class—
 122—LIQUID HEATERS AND VAPORIZERS, subclass 26, Friction generator.
209. FOOT-WARMERS, LIQUID OR GASEOUS FUEL, COMBINED HEATER AND LANTERN. Foot-warmers adapted to be employed both as heater and lantern.
 Note.—This is a combined subclass, and the detail features of both heater and lantern should be searched for in appropriate classes and subclasses.
Search Class—
 126—STOVES AND FURNACES, subclass 267, Heaters, Lunch, Liquid or gaseous fuel, Dinner-buckets, Combined bucket and lantern.
210. FOOT-WARMERS, LIQUID OR GASEOUS FUEL, WATER-HEATER. Water-heating devices that are structurally related to or are combined with body, hand, and foot warming devices.
Search Class—
 237—HEAT-DISTRIBUTING SYSTEMS, subclasses 7, Local, Steam, and 8, Local, Water.
211. STOVE LIDS AND TOPS. Improvements on the top plate of cooking-stoves.
Search Class—
 126—STOVES AND FURNACES, subclasses 214, Stove lids and tops, Liquid or gaseous fuel; 227, Tool-heaters, Flat-iron; 230, Tool-heaters, Liquid or gaseous fuel, Flat-iron, and 338, Stove-shelves, Oven shelf or rack, Rotary.
212. STOVE LIDS AND TOPS, CENTERS OR CROSS-PIECES. Improvements on stove centers or cross-pieces. These devices are generally employed in cooking-stoves.
213. STOVE LIDS AND TOPS, ILLUMINATING. Illuminating and heat-reflecting devices placed on or secured to the top portion of a stove.
Search Class—
 126—STOVES AND FURNACES, subclass 200, Stove doors and windows, Transparent-panel.
214. STOVE LIDS AND TOPS, LIQUID OR GASEOUS FUEL. Improvements in the top or upper portion of a stove peculiarly adapted to the burning of liquid or gaseous fuel.
215. STOVE LIDS AND TOPS, LIQUID OR GASEOUS FUEL, ELEVATING-SUPPORT. Devices designed to be placed on gas or liquid fuel stove tops for supporting the ordinary kitchen utensil or article.
216. STOVE LIDS AND TOPS, LIQUID OR GASEOUS FUEL, EXTENSION-TOP. Gas or liquid fuel tops that are designed to have an enlarged working surface. In most instances they are adapted to utilize the heat from a single burner.
Search Class—
 126—STOVES AND FURNACES, subclass 46, Stoves, Cooking, Liquid or gaseous fuel, Liquid, Wick, Extension-top.
217. STOVE LIDS AND TOPS, HEATING-STOVE. Improvements in the tops of heating stoves. As a rule they relate to the means for opening or closing the magazine feed-opening.
Search Class—
 126—STOVES AND FURNACES, subclass 335, Stove-shelves, Drop, Door-operated.
218. STOVE LIDS AND TOPS, HEATING-STOVES, COOKING ATTACHMENTS. Heating-stove tops that are provided with means to adapt them to be employed in cooking.
Search Class—
 126—STOVES AND FURNACES, subclass 227, Tool-heaters, Flat-iron; 228, Tool-heaters, Flat-iron, Attachments, and 230, Tool-heaters, Liquid or gaseous fuel, Flat-iron.
219. STOVE-LIDS AND TOPS, HEATING-STOVES, ORNAMENTS AND URNS. Heating-stove-top ornaments and urns.

CLASS 126—Continued.

220. STOVE LIDS AND TOPS, LIDS. Improvements in the lids of cooking-stoves.

Search Classes—

126—STOVES AND FURNACES, subclasses 227, Tool-heaters, Flat-iron; 228, Tool-heaters, Flat-iron, Attachments, and 230, Tool-heaters, Liquid or gaseous fuel, Flat-iron.

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 9, Coal-stove attachments, Lid-burners, for lids adapted to the burning of liquid fuel.

221. STOVE LIDS AND TOPS, STOVE-MATS. Devices in the form of mats, round or square, designed to be placed upon the stove-top, usually formed of asbestos and metal, or asbestos having metal-bound edges.

Search Class—

65—KITCHEN AND TABLE ARTICLES.

222. TRASH-BURNERS, COOKING-STOVES. Cooking-stoves adapted for the burning of straw, hay, sawdust, and similar material as fuel.

Search Class—

110—FURNACES, subclasses 5, Furnace structure, Straw burners and feeders, and 6, Furnace structure, Straw burners and feeders, Fire-box, Exterior, Detachable.

223. TRASH-BURNERS, COOKING-STOVES, FEEDING ATTACHMENTS. Straw, hay, sawdust, and similar material feeding attachments, usually of magazine form, applicable to cooking-stove structures.

Search Classes—

126—STOVES AND FURNACES, subclass 11, Stoves, Cooking, Magazine, Portable.

110—FURNACES, subclasses 5, Furnace structure, Straw burners and feeders, and 6, Furnace structure, Straw burners and feeders, Fire-box, Exterior, Detachable.

224. TRASH-BURNERS, DOMESTIC-REFUSE BURNERS. Refuse or "garbage" burner attachments structurally related to the cooking or heating stove art.

Search Classes—

126—STOVES AND FURNACES, subclass 11, Stoves, Cooking, Magazine, Portable.

110—FURNACES, subclasses 5, Furnace structure, Straw burners and feeders; 6, Furnace structure, Straw burners and feeders, Fire-box, Exterior, Detachable; and for wet-fuel burners appropriate subclasses.

225. TRASH-BURNERS, HEATING-STOVES. Heating-stoves structurally adapted for the burning of hay, straw, sawdust and similar material.

Search Class—

110—FURNACES, subclasses 5, Furnace structure, Straw burners and feeders, and 6, Furnace structure, Straw burners and feeders, Fire-box, Exterior, Detachable.

226. TOOL-HEATERS. Miscellaneous devices designed for the heating of various types of tools.

227. TOOL-HEATERS, FLAT-IRON. Solid-fuel stove structures specially designed for the heating of flat-irons or "sad-irons."

Search Class—

126—STOVES AND FURNACES, subclass 25, Stoves, Cooking, Summer.

228. TOOL-HEATERS, FLAT-IRON, ATTACHMENTS. Portable or independent heating devices structurally designed to be employed in connection with solid, gaseous, or liquid fuel stove structures.

Search Class—

126—STOVES AND FURNACES, subclasses 164, Grates, Fireplace; 211, Stove lids and tops; 215, Stove lids and tops, Liquid or gaseous fuel, Elevating-support, and 336, Stove-shelves, Fireplace-grate.

229. TOOL-HEATERS, LIQUID OR GASEOUS FUEL. Devices adapted to the burning of gaseous or liquid fuel specially designed for heating various types of tools.

230. TOOL-HEATERS, LIQUID OR GASEOUS FUEL, FLAT-IRON. Gaseous or liquid fuel stoves specially designed for the heating of flat-irons or "sad-irons."

231. TOOL-HEATERS, LIQUID OR GASEOUS FUEL, GAS-BURNER ATTACHMENTS. Tool-heating devices designed to be attached to gas-brackets. This subclass includes mainly curling-iron heaters.

Search Class—

126—STOVES AND FURNACES, subclass 235, Tool-heaters, Liquid or gaseous fuel, Lamp attachment.

232. TOOL-HEATERS, LIQUID OR GASEOUS FUEL, GAS-BURNER ATTACHMENTS, COMBINED LIGHTING AND HEATING. Gas-burner-attachments where the heating-burner is supplied with gas through the medium of a bypass without affecting the operation of the lighting-burner. As a rule one may be employed to the exclusion of the other, or both at one and the same time.

Search Classes—

126—STOVES AND FURNACES, subclass 254, Heaters, Liquid or gaseous fuel, Attachments, Gas-jet, Combined.

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 103, Burners, Gas, Gas-jet attachments, Convertible.

233. TOOL-HEATERS, LIQUID OR GASEOUS FUEL, GAS-BURNER ATTACHMENTS, JET-MIXER. Gas-burner attachments provided with specific gas and air mixing means whereby the illuminating-flame is converted into a heating-flame.

CLASS 126—Continued.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, especially in subclass 118, Gas and air mixers.

234. TOOL-HEATERS, LIQUID OR GASEOUS FUEL, GAS-BURNER ATTACHMENTS, TOOL-CONTROLLED VALVE. Gas-burner attachments provided with tool-controlled valve mechanism.

Search Class—

126—STOVES AND FURNACES, subclasses 52, Stoves, Cooking, Liquid or gaseous fuel, Valve mechanism, Article-controlled, and 238, Tool-heaters, Soldering-iron, Gas-heaters, Tool-controlled valve.

235. TOOL-HEATERS, LIQUID OR GASEOUS FUEL, LAMP ATTACHMENTS. Tool-heating devices designed to be attached to lamps, but mainly the lamp-chimney. In this subclass will be found curling-iron heaters.

Search Class—

126—STOVES AND FURNACES, subclass 231, Tool-heaters, Liquid or gaseous fuel, Gas-burner attachments.

236. TOOL-HEATERS, SOLDERING-IRON. Solid-fuel furnaces that are portable in character and provided with special means for retaining the iron in the furnace.

Search Class—

126—STOVES AND FURNACES, subclass 25, Stoves, Cooking, Summer.

237. TOOL-HEATERS, SOLDERING-IRON, GAS-HEATERS. Portable gaseous-fuel furnaces structurally designed for the heating of soldering-irons.

238. TOOL-HEATERS, SOLDERING-IRON, GAS-HEATERS, TOOL-CONTROLLED VALVE. Portable gaseous-fuel furnaces designed for the heating of tools and provided with special forms of automatic gas supply and cut-off devices.

Search Class—

126—STOVES AND FURNACES, subclasses 52, Stoves, Cooking, Liquid or gaseous fuel, Valve mechanism, Article-controlled, and 234, Tool-heaters, Liquid or gaseous fuel, Gas-burner attachments, Tool-controlled valve.

239. TOOL-HEATERS, SOLDERING-IRON, LIQUID-FUEL. Portable liquid-fuel furnaces that are designed for the heating of tools, mainly soldering-irons.

240. TOOL-HEATERS, SOLDERING-IRON, LIQUID-FUEL, COMBINED HEATER AND SOLDER-POT. Portable liquid-fuel furnaces designed for the heating of soldering-irons, also the melting or solder pot.

241. TOOL-HEATERS, SOLDERING-IRON, LIQUID-FUEL, LAMP. Portable furnace structures in which the heating means employed is a lamp, and specially designed for the heating of soldering-irons.

242. ASH DISCHARGE AND COLLECTING. Miscellaneous devices designed for the handy removal and collection of ashes from domestic stoves and furnaces. In most instances the devices have direct connection with the stove ash-pit and are in the form of chutes leading to receptacles and provided with gravity-traps. The chutes may also be provided with screens for separating the cinders from the ashes. The subclass includes also receptacles and ash-pit-attaching means and means for removing ashes from the pit into the receptacle.

Search Classes—

57—HOISTING, subclass 37, Chutes.

83—MILLS, subclass 60, Ore and coal, Sifters and screens, Household.

110—FURNACES, subclasses 165, Ash receiving and handling devices, and 167, Ash receiving and handling devices, Ash-pans, Dumping.

220—METALLIC SHIPPING AND STORING VESSELS, subclass 115, Receptacles, Garbage.

243. ASH DISCHARGE AND COLLECTING, ASH-PANS. Miscellaneous ash receptacles or pans designed to be employed in stove or furnace ash-pits.

Search Class—

110—FURNACES, subclass 166, Ash receiving and handling devices, Ash-pans.

244. ASH DISCHARGE AND COLLECTING, ASH-PANS, SIFTING. Devices of the ash-pan type that are provided with sifting means.

Search Class—

83—MILLS, subclasses 56, Ore and coal, Sifters and screens, and 60, Ore and coal, Sifters and screens, Household.

245. ASH DISCHARGE AND COLLECTING, COMBINED STOVE AND ASH-PAN. Devices, generally of the ash-pan type, that include some special feature of stove structure which cooperates with the pan to produce the intended result. Note.—The ash-pans are usually of the sifting type.

246. HEATERS, DISH. Auxiliary heating devices designed for warming dishes or other articles or for keeping warm food-containing vessels after removal from the stove and in which a heat-retaining substance adapted to be preheated is employed. The heated substance may be either liquid or solid.

Search Class—

126—STOVES AND FURNACES, subclasses 33, Stoves, Cooking, Tables, Steam-heated; 207, Foot-warmers, Heated-block, and 262, Heaters, Lunch, and the subclasses thereunder.

CLASS 126—Continued.

247. HEATERS, FRICTIONAL. Devices designed to generate heat by friction for the purpose of heating liquids or solids.
248. HEATERS, LIQUID OR GASEOUS FUEL, ATTACHMENTS, DRUM. Heating-drum attachments adapted for use with heating or illuminating burners.
- Search Class—**
126—STOVES AND FURNACES; subclasses 97, Stoves, Heating, Liquid or gaseous fuel, Liquid, Wick, Heating and illuminating; 183, Heating-drums, and the subclasses thereunder for drum details.
249. HEATERS, LIQUID OR GASEOUS FUEL, ATTACHMENTS, GAS-JET. Miscellaneous attachments in the form of brackets or supports not directly supported by the gas-bracket and designed to sustain articles over a flame.
- Search Class—**
240—ILLUMINATION, subclass 111, Shade, Reflector or globe supports, and the subclasses thereunder.
250. HEATERS, LIQUID OR GASEOUS FUEL, ATTACHMENTS, GAS-JET, AIR. Air-heating attachments adapted for use with the ordinary house gas-bracket.
- Search Class—**
126—STOVES AND FURNACES, Drum subclasses.
251. HEATERS LIQUID OR GASEOUS FUEL, ATTACHMENTS, GAS-JET, AIR, JET-MIXER. Gas-jet air-heating attachments provided with means for mixing gas and air in advance of the flame-point.
- Search Classes—**
126—STOVES AND FURNACES, the subclasses of Heating-drums for drum features.
158—LIQUID AND GASEOUS FUEL BURNERS, subclass 118, Gas and air mixers, for mixer features.
252. HEATERS, LIQUID OR GASEOUS FUEL, ATTACHMENTS, GAS-JET, ARTICLE-SUPPORT. Attachments in the form of brackets or supports directly attached or connected to the ordinary gas-bracket and designed to sustain articles over a flame.
253. HEATERS, LIQUID OR GASEOUS FUEL, ATTACHMENTS, GAS-JET, ARTICLE-SUPPORT, JET-MIXER. Gas-jet article-supporting devices provided with means for mixing gas and air in advance of the flame-point.
- Search Classes—**
126—STOVES AND FURNACES, subclasses 233, Tool-heaters, Liquid or gaseous fuel, Gas-burner attachments, Jet-mixer, and 251, Heaters, Liquid or gaseous fuel, Attachments, Gas-jet, Air, Jet-mixer.
158—LIQUID AND GASEOUS FUEL BURNERS, subclass 118, Gas and air mixers.
254. HEATERS, LIQUID OR GASEOUS FUEL, ATTACHMENTS, GAS-JET, COMBINED. Gas-bracket attachments in connection with which there is employed a combined heating or lighting burner and so related that they can be used join ly or separately.
- Search Classes—**
126—STOVES AND FURNACES, subclass 232, Tool-heaters, Liquid or gaseous fuel, Gas-burner attachments, Combined lighting and heating; also in appropriate subclasses for detail forms of bracket or support.
158—LIQUID AND GASEOUS FUEL BURNERS, subclass 103, Burners gas, Gas-jet attachments, Convertible.
255. HEATERS, LIQUID OR GASEOUS FUEL, ATTACHMENTS, LAMP. Miscellaneous attachments designed for use with lamp or wick burners.
256. HEATERS, LIQUID OR GASEOUS FUEL, ATTACHMENTS, LAMP, ARTICLE-SUPPORT. Article-supporting attachments that are supported upon the lamp-body independent of the lamp-chimney.
257. HEATERS, LIQUID OR GASEOUS FUEL, ATTACHMENTS, LAMP, CHIMNEY-HEATERS, AIR. Air-heaters, usually of drum form, specially applicable to lamp-chimneys.
- Search Class—**
126—STOVES AND FURNACES, subclasses 183, Heating-drums, and appropriate subclasses thereunder, and 245, Heaters, Liquid or gaseous fuel, Attachments, Drum.
258. HEATERS, LIQUID OR GASEOUS FUEL, ATTACHMENTS, LAMP, CHIMNEY-HEATERS, ARTICLE-SUPPORT. Article-supporting brackets that are specially designed to be supported upon lamp-chimneys.
- Search Class—**
126—STOVES AND FURNACES, subclass 235, Tool-heaters, Liquid or gaseous fuel, Lamp attachments.
259. HEATERS, LIQUID OR GASEOUS FUEL, ATTACHMENTS, LAMP, STANDS, AIR-HEATERS. Air or drum heaters that are supported by stands over and independent of the lamp structure.
- Search Class—**
126—STOVES AND FURNACES, Drum subclasses for detail air-heating features.
260. HEATERS, LIQUID OR GASEOUS FUEL, ATTACHMENTS, LAMP, STANDS, ARTICLE-SUPPORT. Article-supporting stands that are employed in connection with lamp-heaters, and they are independent of the form or character of the heater.

CLASS 126—Continued.

261. HEATERS, LUNCH. Heaters designed for warming and keeping warm articles of food. This subclass contains nursery or hot-water bags provided with bottle receptacles or pockets.
- Search Class—**
128—SURGERY, for special bag features other than food receptacles or pockets.
262. HEATERS, LUNCH, COMBINED CAN AND HEATER. Closed receptacles containing food products that are provided with permanently-attached heaters.
263. HEATERS, LUNCH, COMBINED CAN AND HEATER, CHEMICAL HEATER. Combined can and heaters where the heating means is a chemical or heating composition.
- Search Class—**
126—STOVES AND FURNACES, subclass 56, Stoves, Car.
264. Abolished.
265. HEATERS, LUNCH, LIQUID OR GASEOUS FUEL. Miscellaneous food-warming devices employing liquid or gaseous fuel as the heating medium.
266. HEATERS, LUNCH, LIQUID OR GASEOUS FUEL, DINNER-BUCKETS. Devices known as dinner pails or buckets and heated by forms of liquid or gaseous fuel burners.
267. HEATERS, LUNCH, LIQUID OR GASEOUS FUEL, DINNER-BUCKETS, COMBINED BUCKET AND LANTERN. Dinner-buckets structurally adapted to be employed as lanterns.
- Search Classes—**
126—STOVES AND FURNACES, subclass 209, Foot-warmers, Liquid or gaseous fuel, Combined heater and lantern.
240—ILLUMINATION, subclass 2, Combined light and structure.
268. HEATERS, LUNCH, WAGON. Vehicles, sometimes designated "caterers' wagons," designed to keep food at a predetermined temperature while conveying the same to customers or dining room.
- Search Classes—**
126—STOVES AND FURNACES, subclass 276, Ovens, Wagon.
107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 61, Bakers' ovens, Wagon-ovens.
269. HEATERS, POWDER. Devices specially adapted for the thawing of explosives, such as powder, dynamite, etc.
- Search Classes—**
126—STOVES AND FURNACES, subclasses 272, Liquid-sterilizers; 284, Glue-pots, and 370, Water-heaters, Vessels, Steam or water heated.
53—DOMESTIC COOKING VESSELS, subclass 1, Boilers, Domestic.
270. HEATERS, SOLAR. Devices designed to utilize the sun's rays for general heating purposes.
- Search Classes—**
60—MISCELLANEOUS HEAT-ENGINE PLANTS.
75—METALLURGY.
103—PUMPS.
122—LIQUID HEATERS AND VAPORIZERS.
110—FURNACES, subclasses 119, Spark-arresters, and 130, Spark-arresters, Stack.
271. HEATERS, SOLAR, WATER. Solar heaters specially designed to heat water for domestic use.
- 271.1. HEATERS, SURFACE. Miscellaneous devices for applying heat to surfaces and generally adapted to be moved over the surface. Includes devices for heating surfaces by steam, that either comes in contact with the surface to be heated or is applied by a radiator.
- Search Classes—**
37—EXCAVATING, subclasses 35, Snow-road machines, and 39, Miscellaneous.
104—RAILWAYS, subclasses 58, Track-cleaners, Removing weeds, and 153, Track-cleaners, Oilers, and washers.
137—WATER DISTRIBUTION, subclass 63, Irrigating and sprinkling, Carts, for wheeled carts provided with a boiler having nozzles for injecting steam or hot water upon surfaces for heating the ground or melting ice or snow.
- 271.2. HEATERS, SURFACE, FLUID-FUEL. Devices for applying the products of combustion of fluid fuel, hot air heated by fluid fuel, or steam in combination with either the products of combustion or hot air to surfaces. Includes devices for burning weeds or stubble, melting snow or ice, or heating the ground for cultivation.
- Search Classes—**
37—EXCAVATING, subclass 35, Snow-road machines, for analogous structure.
158—LIQUID AND GASEOUS FUEL BURNERS, for burner structure and fluid fuel paint breamers.
- 271.3. HEATERS, SURFACE, SOLID FUEL. Devices for applying the products of combustion of solid fuel or the radiant heat thereof, of hot air, or steam in combination with the products of combustion or hot air to surfaces. Includes devices for thawing frozen earth in placer mining, melting snow and ice, burning weeds or stubble, heating ground for cultivation, and solid fuel paint breamers.
- Search Classes—**
37—EXCAVATING, subclass 35, Snow-road machines.
104—RAILWAYS, subclass 103, Track-cleaners, Hot plows.

CLASS 126—Continued.

272. **LIQUID-STERILIZERS.** Devices designed to sterilize cans or jars and contents thereof. In this subclass are classified mechanisms provided with endless carriers designed to carry the cans or jars forward and submerge them in a liquid bath.
- Note.**—This subclass does not include apparatus for or processes of sterilizing liquids in bulk, which are classified in class 210, **WATER PURIFICATION.**

Search Classes—

31—DAIRY.

53—DOMESTIC COOKING VESSELS, subclasses 1, Boilers, Domestic, and 2, Boilers, Domestic, Steamers.

273. **OVENS, DOMESTIC.** Domestic ovens, that do not fall under more specific classes and subclasses.

Search Class—

126—STOVES AND FURNACES, subclasses 3, Stoves, Cooking, Double fire-pot, Cooking and heating; 4, Stoves, Cooking, Combined cooking and heating stove; 9, Stoves, Cooking, Knockdown or separable; 19, Stoves, Cooking, Ovens; 137, Fireplaces, Cooking and oven attachments; 198, Stove doors and windows, Oven-doors, Ventilating; 218 Stove lids and tops, Heating-stove, Cooking attachments, and 337, Stove, shelves, Oven shelf or rack.

219—ELECTRIC HEATING AND RHEOSTATS, subclass 35, Heaters, Ovens.

274. **OVENS, DOMESTIC, DUTCH.** Domestic ovens, portable in character, having an open side and adapted to receive radiated heat from an open fireplace or stove.

275. **OVENS, DOMESTIC, PORTABLE.** Domestic ovens structurally independent of stove structure and designed to be placed upon stove-surfaces. This subclass includes those devices that are known in the trade as portable gas and vapor stove ovens.

276. **OVENS, WAGON.** Ovens specially adapted to be mounted upon wheeled structures. These devices are usually termed traveling kitchens.

Search Classes—

126—STOVES AND FURNACES, subclasses 268, Heaters, Lunch, Wagon, and 276, Ovens, Wagon.

107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 61, Bakers' ovens, Wagon-ovens.

277. **PLATFORMS.** Devices designed to support stove-bodies. The platform may be provided with means for sustaining it in an elevated position.

Search Class—

126—STOVES AND FURNACES, subclasses 55, Stoves, Cooking, Combined base and hot closet, and 305, Stove-legs, Base-supports.

278. **PLATFORMS, STOVE-BOARDS.** Platforms designed to rest flat upon the floor-surface and to protect the floor from the heat of a stove resting thereon.

279. **PLATFORMS, STOVE-BOARDS, VENTILATING.** Stove-boards so constructed as to allow for a free circulation of air beneath or through them.

Search Class—

126—STOVES AND FURNACES, subclass 143, Fireplaces, Hearths.

280. **SOOT-CATCHERS.** Receptacles designed to be so placed or suspended that they will catch or receive the soot falling from stovepipe or chimney openings.

281. **DOUGH-RAISERS.** Pan or tray devices designed for the raising of dough and usually provided with means for heating and maintaining the heat of the pan or tray at a uniform temperature in excess of that of the surrounding atmosphere.

Search Class—

45—FURNITURE, subclass 16, Kitchen-cabinets.

282. **DOUGH-RAISERS, LAMP TYPE.** Dough-raising devices, having a heater of the liquid-fuel-burner type.

Search Class—

45—FURNITURE, subclass 16, Kitchen-cabinets.

283. **FUEL-BOXES.** Fuel-holding cabinets provided with means for permitting the withdrawal of small quantities of fuel.

Search Classes—

83—MILLS, subclass 56, Ore and coal, Sifters and screens.

211—STORE FURNITURE, subclass 7, Cabinets, and the subclasses thereunder.

284. **GLUE-POTS.** Devices primarily designed for the melting of glue and analogous substances. The pots are usually water or steam jacketed.

Search Class—

126—STOVES AND FURNACES, subclasses 33, Stoves, Cooking, Tables, Steam-heated; 282, Dough-raisers, Lamp type; 370, Water-heaters, Vessels, Steam or water heated; 371, Water-heaters, Vessels, Steam or water heated, Closed chamber or coil, and 372, Water-heaters, Vessels, Steam or water heated, Jet.

285. **DAMPERS.** Miscellaneous dampers not classifiable otherwise.

Search Classes—

126—STOVES AND FURNACES, subclasses 325, Hot-air registers, and 326, Hot-air registers, Wall, for damper details.

110—FURNACES, subclasses 147, Draft-regulators, and 163, Draft-regulators, Damper.

CLASS 126—Continued.

286. **DAMPERS, DISTANCE OPERATING DEVICES.** Operating devices located at a distance and designed to operate smoke, air-flue, and stove draft-dampers.

Search Class—

110—FURNACES, subclass 158, Draft-regulators, Smoke-box, Feeding air, Door-operated.

287. **DAMPERS, DISTANCE OPERATING DEVICES, DOOR-OPERATED.** Damper-operating devices that are coupled up or connected to stove-doors and designed to operate the damper upon the opening or closing of the stove-door.

Search Class—

110—FURNACES, subclass 158, Draft-regulators, Smoke-box, Feeding air, Door-operated.

288. **DAMPERS, FIREPLACE.** Dampers structurally adapted for use in fireplace structures.

Search Class—

126—STOVES AND FURNACES, subclass 205, Dampers, Stovepipe, Lock and indicator, for lock and indicator features.

289. **DAMPERS, STOVE.** Dampers structurally adapted for use with heating or cooking stoves.

290. **DAMPERS, STOVE, DRAFT.** Dampers designed to control the admission of air to the combustion-chamber of stoves.

Search Classes—

126—STOVES AND FURNACES, subclass 193, Stove doors and windows, Feeding air.

110—FURNACES.

291. **DAMPERS, STOVE, REPAIR.** Dampers designed to replace broken or worn-out dampers and adjustable to stoves of different sizes.

Search Class—

126—STOVES AND FURNACES, subclasses 145, Fire-pots and linings, Adjustable for breaking-groove structure, and 153, Grates, Adjustable.

292. **DAMPERS, STOVEPIPE.** Miscellaneous Stovepipe and air-flue dampers.

293. **DAMPERS, STOVEPIPE, COMBINED DAMPER AND VENTILATOR.** Damper devices where the smoke-controlling damper and the ventilating-damper are so connected that the movement of one operates to move the other.

294. **DAMPERS, STOVEPIPE, CONE.** Dampers in the form of a sectional truncated cone. One or both of its sides are usually movable, so as to cause direct or retarded draft in the pipe.

295. **DAMPERS, STOVEPIPE, LOCK AND INDICATOR.** Dampers provided with means for locking or holding the damper in a predetermined position, also devices for indicating their position.

Search Class—

126—STOVES AND FURNACES, subclass 288, Dampers, Fireplace.

296. **DAMPERS, STOVEPIPE, MULTIPLE.** Dampers composed of two or more plates connected by a common operating-rod, so as to receive simultaneous action, thereby affecting the direct or indirect draft of the pipe.

297. **DAMPERS, STOVEPIPE, SINUOUS PASSAGE.** Single-spindle-operating pipe-dampers that have retarding means for giving a circuitous course to the products.

298. **FIRE-DOGS.** Devices generally known as andirons. Some of these devices are provided with a shelf or support, also a fender.

Search Class—

126—STOVES AND FURNACES, subclasses 201, Fenders; 202, Fenders, Fire screen or guard; 203, Fenders, Fireplace-hearth, and 336, Stove-shelves, Fireplace-grate.

299. **STOVE-HOODS.** Miscellaneous devices designed to carry off odors from kitchen ranges, etc.

Search Class—

104—RAILWAYS, subclass 208, Yards and plants, Smoke-jacks.

300. **STOVE-HOODS, STOVE-DISCHARGE.** Stove-hoods that discharge into the stove-body proper.

301. **STOVE-HOODS, STOVEPIPE-DISCHARGE.** Stove-hoods provided with means for connecting them with stovepipes and flues.

Search Class—

126—STOVES AND FURNACES, subclass 312, Stovepipes, Ventilation.

302. **STOVE-HOODS, STOVEPIPE-DISCHARGE, STOVE-CASING.** Stove-hoods designed to inclose a stove; the casing acts as a heat-fender and is provided with ventilating means.

Search Class—

126—STOVES AND FURNACES, subclass 202, Fenders, Fire screen or guard.

303. **STOVE-HOODS, STOVEPIPE-DISCHARGE, TOP-PLATE CASING.** Stove-hoods designed to inclose the top plate of a stove. The casing is usually provided with ventilating means.

304. **STOVE-LEGS.** Stove-legs and the means for attaching them to stove-bodies.

Search Classes—

4—BATHS AND CLOSETS.

155—CHAIRS, subclass 33, Pads and feet.

CLASS 126—Continued.

305. **STOVE-LEGS, BASE-SUPPORTS.** Devices in the form of a ring or base, to which the stove-leg is attached, and designed to support the stove-body.

Search Class—

126—STOVES AND FURNACES, subclasses 55, Stoves, Cooking, Combined base and hot closet; 57, Stoves, Car, Protective casings, and 277, Platforms.

306. **STOVE-LEGS, SHEET-METAL.** Sheet-metal stove-legs.

307. **STOVEPIPES.** Miscellaneous smoke-flues, designed to convey smoke and waste gases from the firepot.

Search Classes—

113—SHEET-METAL WARE, MAKING, especially subclass 33, Tube-making, and the subclasses thereunder.

137—WATER DISTRIBUTION, subclass 9, Cut-offs and spouts, and appropriate subclasses under Mains and pipes.

308. **STOVEPIPES, JOINTS AND COUPLINGS.** Stovepipes wherein the alleged invention consists in means for joining or coupling the ends of the sections.

Search Classes—

126—STOVES AND FURNACES, subclasses 310, Stovepipes, Elbows; 311, Stovepipes, Elbows, Changeable angle, and 318, Stovepipe-thimbles, Stovepipe anchor or lock.

137—WATER DISTRIBUTION, subclasses 9, Cut-offs and spouts; 33, Hose-patches, and 75, Mains and pipes, Pipes, and subclasses under Pipe-couplings.

309. **STOVEPIPES, SEAM.** Stove pipes where the improvement resides in seaming the several pipe or flue sections.

310. **STOVEPIPES, ELBOWS.** Stove pipes where the improvement resides in the form of the elbow.

Search Class—

113—SHEET-METAL WARE, MAKING.

311. **STOVEPIPES, ELBOWS, CHANGEABLE ANGLE.** Adjustable stovepipe elbows adapted to assume different angles.

Search Class—

137—WATER DISTRIBUTION, subclasses under Mains and pipes.

312. **STOVEPIPES, VENTILATION.** Stove pipes having devices designed to carry off vitiated air and odors.

Search Classes—

126—STOVES AND FURNACES, subclasses 293, Dampers, Stovepipe, Combined damper and ventilator, and 301, Stove-hoods, Stovepipe-discharge.

98—PNEUMATICS, subclasses 25, Ventilation, Flue-heaters, and 30, Ventilating-chimneys.

313. **STOVEPIPES, AIR-MOISTENING ATTACHMENTS.** Open vessels containing a liquid and so connected to the stovepipe as to be heated thereby and designed to moisten the air in the room.

Search Class—

98—PNEUMATICS.

314. **STOVEPIPE-THIMBLES.** Devices adapted to be applied to flue and similar openings, forming a lining therefor, and designed to receive a stove or similar pipe.

Search Class—

21—CARRIAGES AND WAGONS, subclass 89, Hub-caps.

315. **STOVEPIPE-THIMBLES ADJUSTABLE FLUE-COLLAR.** Devices capable of vertical adjustment to suit the height of a stovepipe to obviate the necessity of cutting the same to fit the stove-hole of the chimney; also adjustable thimbles adapted to receive different-sized stovepipes.

Search Class—

126—STOVES AND FURNACES, subclass 82, Stoves, Heating, Adjustable pipe-collar.

316. **STOVEPIPE-THIMBLES, COMBINED THIMBLE AND VENTILATOR.** Thimbles designed to ventilate.

317. **STOVEPIPE-THIMBLES, FLOOR OR CEILING PLATES.** Collar and thimble devices designed for use in connection with pipes which pass through the floors or ceilings of buildings.

Search Class—

240—ILLUMINATION, subclass 87, Light supports, Bracket and chandeliers, Hangers, Canopies.

318. **STOVEPIPE-THIMBLES, STOVEPIPE ANCHOR OR LOCK.** Devices for locking the inserted end of a stovepipe in a flue or thimble opening.

Search Class—

126—STOVES AND FURNACES, subclass 308, Stovepipes, Joints and couplings.

319. **STOVEPIPE-THIMBLES, FLUE-STOPPERS.** Devices designed to close flue and thimble openings.

320. **STOVE IMPLEMENTS, COMBINED.** Combined stove implements not otherwise classifiable; includes mainly lid-lifters and poker.

Search Classes—

7—COMPOUND TOOLS, subclass 1, Miscellaneous.

65—KITCHEN AND TABLE ARTICLES, subclasses 10, Compound tools; 32, Plate-lifters, and 56, Compound tools, Gripping.

321. **STOVE IMPLEMENTS, FIRE-TONG.** Devices known as household or kitchen tongs and designed to be used in connection with stoves and open grates.

Search Class—

65—KITCHEN AND TABLE ARTICLES, subclass 52, Table-tongs.

CLASS 126—Continued.

322. **STOVE IMPLEMENTS, HANDLES.** The form of the handle of a stove implement.

Search classes—

126—STOVES AND FURNACES, subclasses 195, Stove doors and windows, Knobs, and 226, Tool-heaters.

68—LAUNDRY, subclass 26, Sad-irons.

219—ELECTRIC HEATING AND RHEOSTATS, subclass 21, Heaters, Tools and instruments, and subclasses thereunder.

323. **STOVE IMPLEMENTS, LID-LIFTER.** Structure or form of stove-lid lifters.

324. **STOVE IMPLEMENTS, POKER.** Household poker.

Search Class—

126—STOVES AND FURNACES, subclass 173, Grates, Raking attachments.

325. **HOT-AIR REGISTERS.** Devices provided with pivoted slats or "louvers," and means for operating them, and designed to be supported in a frame surrounding an air inlet or outlet opening. These devices are usually termed hot-air and ventilating registers.

Search Classes—

126—STOVES AND FURNACES, subclasses 326, Hot-air registers, Wall, and 328, Hot-air registers, Flush-surface, for form of slot or louver and operating means.

116—Hot-air furnaces, Liquid or gaseous fuel, and 285, Dampers.

20—WOODEN BUILDINGS, subclass 60, Shutters, Registering slide.

98—PNEUMATICS, appropriate subclasses under Ventilation.

189—METALLIC BUILDING STRUCTURES, subclasses 82, Grilles, Composite; 83, Grilles, Integral; 84, Grilles, Securing devices, and 54, Shutters, and the subclasses thereunder.

326. **HOT-AIR REGISTERS, WALL.** Wall-registers, usually provided with cut-out means designed to cause the ascending air to be partially or wholly discharged through a selected register.

Search Class—

126—STOVES AND FURNACES, subclass 285, Dampers, and the subclasses thereunder, for details of operating mechanism.

327. **HOT-AIR REGISTERS, BORDER OR FRAME.** Register-supporting border or frame which surrounds the air inlet or outlet opening.

Search Class—

126—STOVES AND FURNACES, subclass 139, Fireplaces, Fronts, Frames.

328. **HOT-AIR REGISTERS, FLUSH-SURFACE.** Registers where the slats or louvers are so pivoted as to form when closed a smooth front-plate surface.

329. **HOT-AIR REGISTERS, HEAT-DISTRIBUTER.** Air deflectors or distributors adapted to be applied to registers and designed to deflect or disseminate the air.

330. **HOT-AIR REGISTERS, AIR-MOISTENING ATTACHMENTS.** Air-moistening devices applicable to hot-air registers.

Search Classes—

126—STOVES AND FURNACES, subclasses 136, Fireplaces, Blow-ers, Stove structure; 115, Hot-air furnaces, Dust-flue, and 313, Stovepipes, Air-moistening attachments.

98—PNEUMATICS, for air-moistening features.

331. **HOT-AIR REGISTERS, FOOT-RESTS.** Combined heating registers and foot-rests.

Search Classes—

126—STOVES AND FURNACES, subclasses 137, Fireplaces, Cooking and oven attachments; 201, Fenders; 204, Foot warmers; 332, Stove shelves, and 337, Stove-shelves, Oven shelf or rack.

155—CHAIRS, subclass 9, Foot-rests.

237—HEAT DISTRIBUTING SYSTEMS, subclass 19, Steam radiators, Attachments.

248—SUPPORTS, subclass 20, Brackets, Special article.

332. **STOVE-SHELVES.** Shelves or racks peculiarly applicable to stoves and as a rule self-supporting.

Search Class—

126—STOVES AND FURNACES, subclasses 190, Stove doors and windows, and 214, Stove lids and tops, Liquid or gaseous fuel.

333. **STOVE-SHELVES, BRACKETS OR STANDS.** Stove-shelves supported by a bracket or stand above the stove-top.

334. **STOVE-SHELVES, DROP.** Shelves so hung as to form when in operative position an extension of the stove-top or oven-bottom.

Search Classes—

126—STOVES AND FURNACES, subclass 190, Stove doors and windows.

45—FURNITURE, for general structure and details.

335. **STOVE-SHELVES, DROP, DOOR-OPERATED.** Shelves so hung as to form an extension of the oven-bottom when the oven-door is open and thrown into operative or inoperative position by the opening or closing of the oven-door.

Search Class—

126—STOVES AND FURNACES, subclasses 191, Stove doors and windows, Balanced, and 217, Stove lids and tops, Heating-Stove.

336. **STOVE-SHELVES, FIREPLACE-GRATE.** Shelves adapted to fireplace-grates or any open-grate structure.

337. **STOVE-SHELVES, OVEN SHELF OR RACK.** Improvements in the form of the oven-rack or shelf.

Search Class—

126—STOVES AND FURNACES, subclass 273, Ovens, Domestic, and the subclasses thereunder.

CLASS 126—Continued.

338. **STOVE-SHELVES, OVEN SHELF OR RACK, ROTARY.** Oven shelves or racks adapted to be revolved or rotated in the oven.

Search Class—

126—STOVES AND FURNACES, subclass 211, Stove lids and tops.

339. **STOVE-SHELVES, OVEN SHELF OR RACK, SLIDING.** Oven shelves or racks adapted to be withdrawn from the oven and means for holding the shelf in its extended horizontal position.

340. **STOVE-SHELVES, OVEN SHELF OR RACK, SLIDING, DOOR-OPERATED.** Sliding oven shelves or racks moved out or in by the opening or closing of the oven-door.

341. **STOVE-SHELVES, STOVEPIPE.** Shelves stationary in character and by reason of their structure and use peculiarly applicable to stovepipes.

342. **STOVE-SHELVES, STOVEPIPE, DROP.** Stovepipe-shelves where the shelf or arm is adapted to be moved into an up or down position.

343. **STOVE-SHELVES, STOVEPIPE, SWINGING.** Stovepipe-shelves that are adapted to be moved right or left upon a fixed pivot.

- 343.5. **MELTING FURNACES.** Miscellaneous heaters specially adapted for melting substances by the application of heat to a receptacle, conduit, or support for the material to be melted.

Search Classes—

126—STOVES AND FURNACES, subclasses 271.1, Heaters, Surface; 271.2, Heaters, Surface, Fluid fuel, and 271.3, Heaters, Surface, Solid fuel, for portable apparatus for applying heat to surfaces generally, whether for the purpose of melting snow and ice, thawing frozen ground, burning weeds or stubble, or preparing ground for cultivation.

37—EXCAVATING, subclasses 35, Snow-road machines, and 39, Miscellaneous, for analogous construction.

137—WATER DISTRIBUTION, subclass 63, Irrigating and sprinkling, Carts, for wheeled tanks and boilers with nozzles for spraying steam or hot water upon the ground for the purpose of heating the ground or melting ice or snow.

344. **WATER-HEATERS.** Miscellaneous devices for heating water for domestic or cooking purposes.

Search Classes—

126—STOVES AND FURNACES, subclass 271, Heaters, Solar, Water.

219—ELECTRIC HEATERS AND RHEOSTATS, subclass 38, Heaters, Fluid.

345. **WATER-HEATERS, KETTLE-FURNACE.** Open-tank or boiler structures beneath which is located the furnace or heater. These devices have heretofore been termed "agricultural boilers."

346. **WATER-HEATERS, KETTLE-FURNACE, CANNING.** Kettle-furnaces provided with special means for treating food products other than in the art of preserving, and includes tray elevating and lowering means.

Search Class—

53—DOMESTIC COOKING VESSELS, subclass 1, Boilers, Domestic.

347. **WATER-HEATERS, KETTLE-FURNACE, HORIZONTAL COMBUSTION-CHAMBER.** Kettle-furnaces in which there is a horizontal extension of the main combustion-chamber.

Search Classes—

31—DAIRY, subclass 22, Cheese-vats and curd-breakers.

127—SUGAR AND SALT, subclass 9, Evaporating-pans.

348. **WATER-HEATERS, KETTLE-FURNACE, STEAM GENERATORS AND COOKERS.** Combined kettle furnace steam-generators and steam-cookers. These devices are designed for cooking, by steam, food products in an open tank or receptacle.

Search Classes—

126—STOVES AND FURNACES, subclasses 366 et seq., Water-heaters, submerged, and 370 et seq., Water-heaters, Vessels.

122—LIQUID HEATERS AND VAPORIZERS, for steam-boiler features.

349. **WATER-HEATERS, KETTLE-FURNACE, TILTING.** Water-heating kettle-furnaces in which the kettle is pivoted or trunnioned, so as to permit the ready dumping of the contents of the kettle.

Search Class—

127—SUGAR AND SALT, subclass 4, Confectionery.

350. **WATER-HEATERS, LIQUID OR GASEOUS FUEL.** Miscellaneous domestic water-heaters that are heated by liquid or gaseous fuel burners.

Search Class—

126—STOVES AND FURNACES, subclass 210, Foot-warmers, Liquid or gaseous fuel, Water-heater.

351. **WATER-HEATERS, LIQUID OR GASEOUS FUEL, AUTOMATIC.** Water-heaters in which the flow of gas to the burner is automatically controlled, either through the medium of a thermostat or through the pressure in the system due to the opening or closing of a valve or valves. The burners are usually provided with continuously-burning pilot-lights.

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS, and 236—DAMPERS, AUTOMATIC, for automatic burner-regulation.

CLASS 126—Continued.

352. ABOLISHED.

353. ABOLISHED.

354. ABOLISHED.

355. **WATER-HEATERS, LIQUID OR GASEOUS FUEL, DRIP-PLATE.** Water-heaters in which the water is admitted into the top portion of the heater and descends to the bottom portion thereof through the medium of shallow pans or suspended metal strips, the water coming in direct contact with the ascending gaseous product of combustion.

Search Class—

126—STOVES AND FURNACES, subclass 359, Water-heaters, Liquid or gaseous fuel, Overflow.

356. ABOLISHED.

357. **WATER-HEATERS, LIQUID OR GASEOUS FUEL, HINGED OR SEPARABLE.** Devices in the nature of water-backs and designed to be employed with liquid or gaseous fuel cooking-stoves. These devices may be hinged to or be a separable part of the stove proper.

358. **WATER-HEATERS, LIQUID OR GASEOUS FUEL, LAMP TYPE.** Water-heaters structurally related to the lamp or wick type burners. The chimney or combustion flue of lamps is as a rule surrounded by the water or liquid contained vessel.

359. **WATER-HEATERS, LIQUID OR GASEOUS FUEL, OVERFLOW.** Liquid or gaseous fuel portable water-heaters in which the supply-pipe leads into and discharges in the upper portion of the water receptacle or heater and the water is sprayed and caused to flow downward over the heated cylinders and in a reverse direction to the flame.

Note.—For detail features search appropriate detail Water-heater subclasses, especially subclass 355, Drip-plate.

360. **WATER-HEATERS, LIQUID OR GASEOUS FUEL, SUBMERGED.** Submerged liquid tank heaters that employ liquid or gaseous fuel, the flame not being in direct contact with the liquid. This subclass includes both the stationary and portable type of heater.

Search Classes—

126—STOVES AND FURNACES, subclasses 366 et seq., Submerged, for detail tank features.

60—MISCELLANEOUS HEAT-ENGINE PLANTS, for devices in which the flame is in direct contact with the water.

361. **WATER-HEATERS, STAND-BOILERS.** Structure of water-holding tanks or boilers. These devices are termed generally "kitchen-range boilers."

Search Classes—

122—LIQUID HEATERS AND VAPORIZERS.

220—METALLIC SHIPPING AND STORING VESSELS, subclass 108, Casks, and the subclasses thereunder.

362. **WATER-HEATERS, STAND-BOILERS, CIRCULATION.** Stand-boilers where the improvements reside in specific water-circulating means.

Search Class—

126—STOVES AND FURNACES, subclass 365, Water-heaters, Stovepipe, Circulation.

363. **WATER-HEATERS, STAND-BOILERS, SUPPORTS.** Devices designed to support stand-boilers and similar structures.

Search Class—

248—SUPPORTS.

364. **WATER-HEATERS, STOVEPIPE.** Stoves provided with water-tanks through which some portion of the smoke-pipe passes to heat the water therein.

365. **WATER-HEATERS, STOVEPIPE, CIRCULATION.** Stovepipe water-heaters which are provided with circulation-pipes between the heater and an adjacent tank or reservoir. These heaters have the character and function of "water-backs."

Search Class—

126—STOVES AND FURNACES, subclass 362, Water-heaters, Stand-boilers, Circulation.

366. **WATER-HEATERS, SUBMERGED, CLOSED SYSTEMS PIPES.** Steam or hot-water pipes in a closed liquid-heating system and designed to heat the same.

Search Classes—

126—STOVES AND FURNACES, subclasses 370 et seq., Water-heaters, Vessels.

219—ELECTRIC HEATING AND RHEOSTATS, subclass 38, Heaters, Fluid, and the subclasses thereunder.

367. **WATER-HEATERS, SUBMERGED, PORTABLE.** Solid-fuel stove structures designed to be submerged in an open tank of liquid for heating the same. The stove structure does not form a permanent part of the tank, but is readily removable from the tank.

Search Class—

219—ELECTRIC HEATING AND RHEOSTATS, subclass 38, Heaters, Fluid, and the subclasses thereunder.

368. **WATER-HEATERS, SUBMERGED, STATIONARY.** Solid-fuel stove structures adapted to be submerged in an open tank of liquid for heating the same.

CLASS 126—Continued.

Search Classes—

219—ELECTRIC HEATING AND RHEOSTATS, subclass 38, Heaters, Fluid, and the subclasses thereunder.

137—WATER DISTRIBUTION, subclasses 21, Tanks, and 68, Tanks, Automatic.

369. WATER-HEATERS, STEAMING APPARATUS. Steam boxes or receptacles designed for steaming or cooking food products.

Search Classes—

126—STOVES AND FURNACES, subclass 20, Stoves, Cooking, Ovens, Steam or hot water.

34—DRIERS.

83—MILLS, subclasses 27, Preparing grain, Steaming and dampening, and 28, Preparing grain, Processes.

370. WATER-HEATERS, VESSELS, STEAM OR WATER HEATED. Steam or water jacketing devices that wholly or partially surround open receptacles and designed to heat the contents therein contained. The devices as a whole are usually termed "steam-jacketed kettles."

CLASS 126—Continued.

Search Classes—

126—STOVES AND FURNACES, subclasses 231, Dough-raisers, and 293, Dampers, Stovepipe, Combined damper and ventilator.

87—OILS, FATS, AND GLUE, subclass 13, Rendering.

127—SUGAR AND SALT, subclass 4, Confectionery.

371. WATER-HEATERS, VESSELS, STEAM OR WATER HEATED, CLOSED CHAMBER OR COIL. Devices in the form of a steam chamber or coil designed to be immersed in and heat the contents of open receptacles.

Search Classes—

126—STOVES AND FURNACES, subclass 366, Water-heaters, Submerged, Closed systems pipes.

219—ELECTRIC HEATING AND RHEOSTATS, subclass 41, Heaters, Fluid, Immersion.

372. WATER-HEATERS, VESSELS, STEAM OR WATER HEATED, JET. Devices that are designed to inject steam into water contained in open receptacles for heating water or cooking purposes.

Search Class—

126—STOVES AND FURNACES, subclass 348, Water-heaters, Kettle-furnace, Steam generators and cookers.

CLASS 129.—PAPER FILES AND BINDERS.

DEFINITIONS.

Class.

This class contains all devices for filing or temporarily binding loose sheets, pamphlets, newspapers, cards, photographs, clippings, etc., except those not designed for this purpose only and those which are more properly classified as articles of furniture, receptacles, or mere clasps.

Subclasses.

1. MISCELLANEOUS. Files and binders of types differing from those in the specific subclasses, together with a few implements for inserting papers into a file or binder.
2. CONTINUOUS-WEB. The file consists, essentially, of a continuous web which travels over rollers and upon which papers may be secured by being pasted directly to the web or by means of various fastening devices.
3. PINS AND INDEXES. Impaling-pins provided with indexes for the filed papers.
4. PINS AND FOLLOWERS. The sheets of paper are secured upon impaling-pins, and a follower serves to hold them together, to protect them, or to force them upon the pins.
5. PINS AND FOLLOWERS, SPRING. Filing-pins and followers which are thrown into or out of operative position by springs.
6. PINS AND FOLLOWERS, SPRING, SLIDING. Filing-pins and sliding followers, which are spring actuated.
7. PINS AND PUNCHES. Files of the impaling-pin type which are provided with punches for perforating the papers before filing.
8. PINS AND TRANSFER-WIRES. Files having impaling-pins and wires which may be brought into juxtaposition with the pins, so that papers may be readily transferred from the pins to the wires.
9. PINS AND TRANSFER-WIRES, SLIDING-BASE. Impaling-pins or transfer-wires mounted upon a slidable base, by the movement of which the wires and pins are caused to engage or disengage.
10. PINS AND TRANSFER-WIRES, SWINGING. Filing-pins or transfer-wires adapted to be swung laterally to cause them to engage or disengage.
11. PINS AND TRANSFER-WIRES, TILTING. Impaling-pins transfer-wires, or both, capable of a tilting movement, by means of which they are caused to engage or disengage.
12. PROJECTING PINS AND COVERS. Covers, one of which is provided with pins which pass through perforations in the filed sheets and through the other cover, which is provided with some fastening device to engage with the pins.
13. EXTENSIBLE PINS AND COVERS. Covers provided with binding pins, usually telescoping, capable of extension to increase the capacity of the binder.
14. FOLLOWERS AND INDEX-PARTITIONS. Files having followers to exert pressure upon the filed papers, and provided with adjustable index-partitions.
15. INDEXES. Index-sheets for file-cases, retainers for index-sheets, and combinations of cases and index leaves or partitions, provided the index-leaves do not form an integral part of the case structure.
16. INDEXES, CARD. Cases for index-cards, cards for indexes (including some envelop-like receptacles for receiving memoranda and adapted for use as index-cards), combinations of cases and cards, and combinations of cases and memorandum-books or the like.
17. PINS AND HINGED BACKS. Book-covers hinged at the back and provided with pins rigidly mounted on the covers. To expose the pins in position to receive papers, the covers must be opened wide.
18. NOTCHED LEAVES. Binders in which the retaining devices engage with notches of various forms in the margins of the leaves.
19. STUBS AND FLAPS. Series of stubs to which the filed papers are attached singly or in groups and flaps between which

CLASS 129—Continued.

papers are fastened. Any kind of fastening means may be employed, and the whole device is usually in book form.

20. SCRAP-BOOK AND ALBUM LEAVES. Leaves designed for scrap-books and albums and provided with gummed surfaces, pockets, clips, bands, or other devices for holding clippings, cards, and the like.
21. PINS. Sharpened pins or hooks mounted in receptacles, in book-covers, or upon some form of base adapted to stand on a desk or hang upon a wall.
22. PINS, CORD-CARRYING. Pins designed to carry binding threads or cords for securing the papers when removed from the pins.
23. PINS, GUARDED. Impaling-pins provided with some device for preventing the accidental escape of the filed papers.
24. PINS, HINGED. Filing-pins attached to a support by hinges or pivots.
25. BINDING-WIRES. Covers or presser-bars combined with wires or flexible strips of metal, which are bent down after passing through the sheets to prevent their escape.
26. FOLLOWERS. Filing-receptacles provided with movable members of various kinds which press upon the filed papers and hold them securely.
27. FOLLOWERS, LOCKING. Followers provided with means of various kinds for holding them in fixed position some of them locking only when jammed against the papers in the file.
28. FOLLOWERS, LOCKING, RACKS. Followers secured in position by the engagement of a detent with a rack.
29. FOLLOWERS, LOCKING, LEVER-OPERATED CATCH. Followers secured in position by means of locking-catches operated by levers.
30. FOLLOWERS, LOCKING, SPRING-OPERATED CATCH. Followers provided with spring-operated locking-catches.
31. FOLLOWERS, LOCKING, TILTING-RELEASE. Locking-followers released from their locked position by simply tilting the follower.
32. FOLLOWERS, SPRING. Followers consisting of springs acting directly upon the papers or of movable pieces actuated by springs.
33. FOLLOWERS, SPRING, DOUBLE-ACTING. Followers held in both operative and inoperative position by springs.
34. HINGED LEAF-SUPPORTS. Hinged or pivoted plates provided with devices for securing the papers thereon.
35. CLAMPING. Filing or binding devices in which the papers are secured by clamping action only.
36. CLAMPING, PARALLEL BARS. A pair of clamping-bars between which papers are gripped.
37. CLAMPING, SPRING-BACKS. Covers provided at the back with spring clamping devices.
38. FOLD-ENGAGING, BARS. Devices for binding sheets or pamphlets by means of bars engaging with their folds.
39. FOLD-ENGAGING, CORDS. Book-covers or other supports provided with cords for engagement with the folds of sheets or pamphlets.
40. FOLD-ENGAGING, HOOKS. Covers or other supports provided with hooks for engagement with the folds of sheets or pamphlets.
41. TRANSVERSE CORDS. Cords or tapes which pass through the leaves to be secured.
42. TRANSVERSE CORDS AND LEAF-ATTACHERS. Fasteners of various kinds used to attach the leaves to the cords.
43. FILE-BOXES. Receptacles commonly of a box-like structure, but in which the construction is modified to specially adapt the case as a container for filing papers. Does not include stands or racks forming stationary pieces and serving as file-cabinets or simple covers or cases providing only the protecting function for inclosing maps or drawings.

CLASS 133.—COIN-HANDLING.

DEFINITIONS.

Class.

This class includes machines and appliances employed for the purpose of handling coins or checks or tokens similar in shape to coins and used as substitutes therefor for facilitating the making of change or for transferring change from the clerk or cashier to the customer.

The class does not include means for transmitting money between a clerk and a cashier at a distance, these being in classes 186, STORE-SERVICE and 243, PNEUMATIC DESPATCH; nor does it include money drawers or tills unless they are specially constructed for use in connection with coins.

It should be noted in connection with this class that machines very similar in construction, but used in connection with articles other than coins, are found in several classes. For example, machines similar or analogous to coin-assorters, but for separating cartridges, fruit, vegetables, coal, etc., are found in class 73, MEASURING INSTRUMENTS, subclass 16, Gages, and subclasses thereunder, in class 83, MILLS, subclass 56, Ore and coal, Sifters and screens, and in class 130, THRESHING, subclass 32, Fruit and vegetable separators. Machines for delivering powders, etc., are found in class 73, MEASURING INSTRUMENTS, subclass 62, Measuring vessels, and subclasses thereunder. Machines similar to coin-deliverers are found in class 211, STORE FURNITURE, subclass 8, Cabinets, delivering. Machines similar to the hand-operated coin-deliverers for delivering stamps or tickets are found in class 220, METALLIC SHIPPING AND STORING VESSELS, subclass 5, Boxes, and subclasses thereunder, and isolated patents may also be found in other classes for operating on other articles or materials.

Subclasses.

1. MISCELLANEOUS. Coin-handling devices not classifiable elsewhere.
2. CHANGE-MAKERS. Machines having two sets of mechanisms, one representing money tendered for a purchase and the other the amount of the purchase, the two sets being so connected that by the proper manipulation of both the difference between the amount tendered and the purchase, or the change, is delivered from the machine.
3. ASSORTERS. Machines or receptacles in which coins of different sizes are placed and containing provision whereby the coins are automatically or mechanically sorted according to their size.

CLASS 133—Continued.

4. DELIVERERS, MULTIPLE. Machines including tubes or equivalents for containing coins of different values and means for delivering coins from one or more tubes by the movement of a single selected key or its equivalent.
5. DELIVERERS, SINGLE. Machines containing either a single tube or a number of tubes and provision whereby at a single movement a coin is mechanically ejected from any single selected tube.
6. DELIVERERS, SINGLE, HAND-OPERATED. Coin-tubes from which a coin may be manually removed.
7. TUBES. Tubes for containing coins and having provision whereby the coins can not be removed until a certain number has been placed therein or until the tube is unlocked.
8. COUNTERS. Machines or implements by which coins (not their values) may be counted.
9. PACKAGES. Inclosing casings of wire, sheet metal, or the like adapted to hold a definite number of coins in convenient shape for storage or handling.
10. PACKAGES, WRAPPERS. Blanks of paper, sheet metal, or other material cut into the proper shape to be wrapped about a package of coins.
11. RECEPTACLES. Receptacles otherwise unclassified for holding coin, especially such as are adapted to hold in separate places coins of different values in order that they may easily be taken therefrom in making change, etc.
12. RECEPTACLES, MATS AND TRAYS. Mats or trays adapted to be placed upon a store counter for holding change, so that it may easily be picked up by a customer.
13. RECEPTACLES, MATS AND TRAYS, COUNTER. Mats or trays inserted in or flush with the surface of a store-counter.
14. RECEPTACLES, MATS AND TRAYS, MOUNTED. Mats or trays mounted upon a supporting stand, placed on a store counter or other convenient place.

CLASS 134.—LIQUID COATING COMPOSITIONS.

DEFINITIONS.

Class.

This class includes compositions which are ordinarily used in a liquid condition for coating various materials as a protective, sizing, polishing, or coloring coating or as an ink; also, processes of treating and making the composition and processes of mixing the ingredients to form the composition; also some apparatus specialized to the manufacture of liquid coating compositions.

It does not include processes which are clearly distinct from the composition, such as processes of laying on the composition or treating the material coated or processes of making the separate ingredients.

Nor does it include compositions for glazes or enamels of a glass-like nature, compositions for use as adhesives, lubricants, or detergents, or compositions which soak into the material without leaving a polish or coating on the outside, such as compositions for dyes, wood saturation (with the exception of fireproof compounds) or the manufacture of leather.

Compositions intended particularly for writing-surfaces, such as blackboards and slates, are classified in class 35, EDUCATIONAL APPLIANCES, and cross-referenced into this class wherever considered necessary.

Subclasses.

1. MISCELLANEOUS. Compositions which are used in a liquid condition for coating and not classifiable in any of the other subclasses.

Search Class—

- 106—PLASTIC COMPOSITIONS, subclass 1, Miscellaneous.

2. BARREL-LINING. Miscellaneous compositions for barrel-lining. Under "Barrel-lining" and its subclasses are included compositions for coating the inside of barrels, casks, and similar receptacles.

Search Class—

- 134—LIQUID COATING COMPOSITIONS, subclasses 7, Leather coating and polishing, and 18, Sizing.

3. BARREL-LINING, BITUMINOUS AND RESINOUS. Compositions for barrel-lining containing ingredients of a bituminous or resinous nature, except those containing tar and wax, which are classified in the two following subclasses. Under the head of "Bituminous and resinous" are included compositions which contain ingredients in the nature of bitumen, asphalt, resin, etc., which are characterized by the fact that they are softened by heat and harden when cold or are dissolved by solvents and hardened by evaporation of these solvents. Includes gum-resins, but not gums.

Search Classes—

- 134—LIQUID COATING COMPOSITIONS, subclasses 8, Leather coating and polishing, Bituminous and resinous; 13, Fabric coating and waterproofing, Bituminous and resinous; 21, Sizing, Bituminous and resinous; 41, Paint, Antifouling and insecticidal, Bituminous and resinous; 26, Varnish; 36, Ink, Printers', Bituminous and resinous, and 51, Paint, Bituminous and resinous.

- 106—PLASTIC COMPOSITIONS, subclasses 15, Electrical insulating, Bituminous and resinous, and 31, Artificial stone, Bituminous and resinous.

4. BARREL-LINING, BITUMINOUS AND RESINOUS, TAR. Compositions for barrel-lining containing ingredients of a tarry nature, such as coal-tar, gas-tar, wood-tar, pine-tar, petroleum-tar, tar-pitch, etc.

Search Classes—

- 134—LIQUID COATING COMPOSITIONS, subclasses 14, Fabric coating and waterproofing, Bituminous and resinous, Tar; 42, Paint, Antifouling and insecticidal, Bituminous and resinous, Tar, and 52, Paint, Bituminous and resinous, Tar.

- 106—PLASTIC COMPOSITIONS, subclasses 16, Electrical insulating, Bituminous and resinous, Tar, and 32, Artificial stone, Bituminous and resinous, Tar.

5. BARREL-LINING, BITUMINOUS AND RESINOUS, WAX. Compositions for barrel-lining containing ingredients of a waxy nature, such as beeswax, mineral wax, ozokerite, paraffin, etc.

Search Classes—

- 134—LIQUID COATING COMPOSITIONS, subclasses 9, Leather coating and polishing, Bituminous and resinous, Wax; 15, Fabric coating and waterproofing, Bituminous and resinous, Wax; 22, Sizing, Bituminous and resinous, Wax; 43, Paint, Antifouling and insecticidal, Bituminous and resinous, Wax, and 53, Paint, Bituminous and resinous, Wax.

- 106—PLASTIC COMPOSITIONS, subclasses 17, Electrical insulating, Bituminous and resinous, Wax, and 33, Artificial stone, Bituminous and resinous, Wax.

6. BARREL-LINING, GELATINOUS AND GUMMY. Compositions for barrel-lining containing ingredients of a gelatinous or gummy nature. Under the head of "Gelatinous and gummy" are included compositions which contain ingredients such as ordinary glue, gelatin, flour, starch, dextrine, etc., and gums such as gum-arabic and gum-tragacanth. These substances are characterized by the fact that they either dissolve, soften, or gelatinize in water. Does not include the gum-resins.

CLASS 134—Continued.

Search Classes—

- 134—LIQUID COATING COMPOSITIONS, subclasses 10, Leather coating and polishing, Gelatinous and gummy; 16, Fabric coating and waterproofing, Gelatinous and gummy; 19, Sizing, Laundry starch and polish; 23, Sizing, Gelatinous and gummy, and 55, Paint, Gelatinous and gummy.

- 106—PLASTIC COMPOSITIONS, subclasses 36, Artificial stone, Gelatinous and gummy, and 39, Gelatinous and gummy.

7. LEATHER COATING AND POLISHING. Compositions for coating leather for the purpose of waterproofing, polishing, and coloring it, not included in the next three subclasses. Under "Leather coating and polishing" and its subclasses are included compositions for blacking and polishing boots and shoes. When the composition is used in treating the leather during the manufacture or is merely for softening the leather by soaking into it without leaving a coating or polish, it is classified in class 149, HIDES, SKINS, AND LEATHER.

Search Class—

- 134—LIQUID COATING COMPOSITIONS, subclasses 2, Barrel-lining; 11, Fabric coating and waterproofing; 18, Sizing, and 39, Paint.

8. LEATHER COATING AND POLISHING, BITUMINOUS AND RESINOUS. Compositions for coating leather containing ingredients of a bituminous nature, except those containing wax, which are classified under subclass 9 in this class. (See definition under subclass 3, Barrel-lining, Bituminous and resinous.)

Search Class—

- 134—LIQUID COATING COMPOSITIONS, subclasses 3, Barrel-lining, Bituminous and resinous; 13, Fabric coating and waterproofing, Bituminous and resinous; 21, Sizing, Bituminous and resinous; 26, Varnish; 36, Ink, Printers', Bituminous and resinous; 41, Paint, Antifouling and insecticidal, Bituminous and resinous, and 51, Paint, Bituminous and resinous.

9. LEATHER COATING AND POLISHING, BITUMINOUS AND RESINOUS, WAX. Compositions for coating leather containing ingredients of a waxy nature.

Search Classes—

- 134—LIQUID COATING COMPOSITIONS, subclasses 5, Barrel-lining, Bituminous and resinous, Wax; 15, Fabric coating and waterproofing, Bituminous and resinous, Wax; 22, Sizing, Bituminous and resinous, Wax; 43, Paint, Antifouling and insecticidal, Bituminous and resinous, Wax, and 53, Paint, Bituminous and resinous, Wax.

- 106—PLASTIC COMPOSITIONS, subclass 17, Electrical insulating, Bituminous and resinous, Wax.

10. LEATHER COATING AND POLISHING, GELATINOUS AND GUMMY. Compositions for coating leather containing ingredients of a gelatinous or gummy nature. (See definition under subclass 6, Barrel-lining, Gelatinous and gummy.)

Search Classes—

- 134—LIQUID COATING COMPOSITIONS, subclasses 6, Barrel-lining, Gelatinous and gummy; 16, Fabric coating and waterproofing, Gelatinous and gummy; 19, Sizing, Laundry starch and polish; 23, Sizing, Gelatinous and gummy, and 55, Paint, Gelatinous and gummy.

- 106—PLASTIC COMPOSITIONS, subclass 39, Gelatinous and gummy.

11. FABRIC COATING AND WATERPROOFING. Miscellaneous compositions for coating and waterproofing cloth, paper, and similar fabrics.

Search Class—

- 134—LIQUID COATING COMPOSITIONS, subclasses 2, Barrel-lining; 7, Leather coating and polishing; 18, Sizing, and 39, Paint.

12. FABRIC COATING AND WATERPROOFING, PROTEIDS. Compositions for coating and waterproofing fabrics containing one or more of the proteids—such as casein, gluten, albumin, fibrin, etc.—or substances made up partly of proteids, such as milk and blood. They are characterized by the fact that they are coagulated by heat or chemicals.

Search Classes—

- 134—LIQUID COATING COMPOSITIONS, subclasses 20, Sizing, Proteids, and 50, Paint, Proteids.

- 106—PLASTIC COMPOSITIONS, subclass 38, Proteids.

13. FABRIC COATING AND WATERPROOFING, BITUMINOUS AND RESINOUS. Compositions for coating and waterproofing fabrics containing ingredients of a bituminous and resinous nature, except those containing tar and wax, which are classified under subclasses 14 and 15 in this class. (See definition under subclass 3, Barrel-lining, Bituminous and resinous.)

Search Classes—

- 134—LIQUID COATING COMPOSITIONS, subclasses 3, Barrel-lining, Bituminous and resinous; 8, Leather coating and polishing, Bituminous and resinous; 21, Sizing, Bituminous and resinous; 26, Varnish; 36, Ink, Printers', Bituminous and resinous; 41, Paint, Antifouling and insecticidal, Bituminous and resinous, and 51, Paint, Bituminous and resinous.

- 106—PLASTIC COMPOSITIONS, subclass 15, Electrical insulating, Bituminous and resinous.

CLASS 134—Continued.

14. FABRIC COATING AND WATERPROOFING, BITUMINOUS AND RESINOUS, TAR. Compositions for coating and waterproofing fabrics containing ingredients of a tarry nature.

Search Classes—

134—LIQUID COATING COMPOSITIONS, subclasses 4, Barrel-lining, Bituminous and resinous, Tar; 42, Paint, Antifouling and insecticidal, Bituminous and resinous, Tar, and 52, Paint, Bituminous and resinous, Tar.

106—PLASTIC COMPOSITIONS, subclass 16, Electrical insulating, Bituminous and resinous, Tar.

15. FABRIC COATING AND WATERPROOFING, BITUMINOUS AND RESINOUS, WAX. Compositions for coating and waterproofing fabrics containing ingredients of a waxy nature.

Search Classes—

134—LIQUID COATING COMPOSITIONS, subclasses 5, Barrel-lining, Bituminous and resinous, Wax; 9, Leather coating and polishing, Bituminous and resinous, Wax; 22, Sizing, Bituminous and resinous, Wax; 43, Paint, Antifouling and insecticidal, Bituminous and resinous, Wax, and 53, Paint, Bituminous and resinous, Wax.

106—PLASTIC COMPOSITIONS, subclass 17, Electrical insulating, Bituminous and resinous, Wax.

16. FABRIC COATING AND WATERPROOFING, GELATINOUS AND GUMMY. Compositions for coating and waterproofing fabrics containing ingredients of a gelatinous or gummy nature. (See definition under subclass 6, Barrel-lining, Gelatinous and gummy.)

Search Classes—

134—LIQUID COATING COMPOSITIONS, subclasses 6, Barrel-lining, gelatinous and gummy; 10, Leather coating and polishing, Gelatinous and gummy; 23, Sizing, Gelatinous and gummy; 19, Sizing, Laundry starch and polish, and 55, Paint, Gelatinous and gummy.

106—PLASTIC COMPOSITIONS, subclass 39, Gelatinous and gummy.

17. FABRIC COATING AND WATERPROOFING, RUBBER. Compositions for coating and waterproofing fabrics containing rubber, caoutchouc, balata, gutta-percha, or other ingredients in the nature of rubber.

Search Classes—

134—LIQUID COATING COMPOSITIONS, subclass 54, Paint, Rubber.

106—PLASTIC COMPOSITIONS, subclass 13, Electrical insulating, Rubber.

18. SIZING. Miscellaneous compositions for sizing fabrics, walls, etc. Under "Sizing" and its subclasses are included compositions for filling, stiffening, and giving a smooth surface to fabrics and also compositions used as a sizing for walls, etc. The compositions are usually applied to fabrics and form more or less of a coating; but they may be mixed with the pulp in the beating-engine.

Search Class—

134—LIQUID COATING COMPOSITIONS, subclasses 2, Barrel-lining; 7, Leather coating and polishing; 11, Fabric coating and waterproofing, and 19, Sizing, Laundry starch and polish.

19. SIZING, LAUNDRY STARCH AND POLISH. Compositions for starching and polishing linen and similar cloth.

20. SIZING, PROTEIDS. Compositions for sizing containing ingredients which fall under the head of "Proteids." (See also definition under subclass 12, Fabric coating and waterproofing, Proteids.)

Search Classes—

134—LIQUID COATING COMPOSITIONS, subclasses 12, Fabric coating and waterproofing, Proteids, and 50, Paint, Proteids.

106—PLASTIC COMPOSITIONS, subclass 38, Proteids.

21. SIZING, BITUMINOUS AND RESINOUS. Compositions for sizing containing ingredients of a bituminous or resinous nature, except those containing wax, which are classified in subclass 22 in this class. (See definition under subclass 3, Barrel-lining, Bituminous and resinous.)

Search Classes—

134—LIQUID COATING COMPOSITIONS, subclasses 3, Barrel-lining, Bituminous and resinous; 8, Leather coating and polishing, Bituminous and resinous; 13, Fabric coating and waterproofing, Bituminous and resinous; 26, Varnish; 36, Ink, Printers', Bituminous and resinous; 41, Paint, Antifouling and insecticidal, Bituminous and resinous, and 51, Paint, Bituminous and resinous.

106—PLASTIC COMPOSITIONS, subclass 15, Electrical insulating, Bituminous and resinous.

22. SIZING, BITUMINOUS AND RESINOUS, WAX. Compositions for sizing containing ingredients of a waxy nature.

Search Classes—

134—LIQUID COATING COMPOSITIONS, subclasses 5, Barrel-lining, Bituminous and resinous, Wax; 9, Leather coating and polishing, Bituminous and resinous, Wax; 15, Fabric coating and waterproofing, Bituminous and resinous, Wax; 43, Paint, Antifouling and insecticidal, Bituminous and resinous, Wax, and 53, Paint, Bituminous and resinous, Wax.

106—PLASTIC COMPOSITIONS, subclass 17, Electrical insulating, Bituminous and resinous, Wax.

23. SIZING, GELATINOUS AND GUMMY. Compositions for sizing containing ingredients of a gelatinous or gummy nature. (See definition under subclass 6, Barrel-lining, Gelatinous and gummy.)

CLASS 134—Continued.

Search Classes—

134—LIQUID COATING COMPOSITIONS, subclasses 6, Barrel-lining, Gelatinous and gummy; 10, Leather coating and polishing, Gelatinous and gummy; 16, Fabric coating and waterproofing, Gelatinous and gummy; 19, Sizing, Laundry starch and polish, and 55, Paint, Gelatinous and gummy.

106—PLASTIC COMPOSITIONS, subclass 39, Gelatinous and gummy.

24. FURNITURE-POLISH. Compositions for polishing and restoring the paint on furniture and similar articles.

Search Class—

87—OILS, FATS, AND GLUE, subclass 5, Detergents, for compositions that clean without leaving a coating.

- 24.5. METAL DEPOSITING. Compositions containing metallic salts from which the metal is chemically precipitated by wet processes to form a metal coating.

Search Classes—

91—COATING, subclass 68.7, Processes, with metal, Precipitation, for unstable compositions prepared for immediate use.

204—ELECTROCHEMISTRY for compositions for coating by electro-deposition.

25. STOVE-POLISH. Compositions for polishing and blacking stoves.

26. VARNISH. Compositions consisting of a solution of resinous matter in alcohol, linseed-oil, turpentine, or similar solvents, forming a transparent liquid, which when applied in a thin coat to the surface of a solid body dries to a hard, lustrous, and shining film without losing its transparency. They may contain a certain amount of coloring material; but when this is in sufficient quantity to render the composition at all opaque they are classified with "Paint," subclasses 50, 51, or 52, in this class.

Search Class—

134—LIQUID COATING COMPOSITIONS, subclass 24, Furniture-polish.

27. WINDOW-FROST PREVENTIVE. Compositions which are used to coat window-panes to prevent the formation of frost on them.

28. INK. Compositions for ink not classifiable in any of the other subclasses. Under "Ink" and its subclasses are included compositions for producing characters by means of writing, printing, or marking. They are usually in the form of colored liquids at the time of using, but may be viscous, as in the case of printers' ink, or colorless, as in the case of sympathetic ink.

29. INK, SYMPATHETIC. Compositions for ink which produce invisible characters when used, but which become visible when subjected to the action of heat, light, or appropriate chemical reagents.

30. INK, BRANDING. Compositions for branding animals, usually by depilation.

31. INK, COPYING. Compositions for ink which retain enough solubility to give off impressions from the original sheet upon a sheet of damp paper pressed thereon. They contain either hygroscopic substances to prevent drying or substances which arrest the action of the air by forming a soluble glaze over the ink.

Search Class—

134—LIQUID COATING COMPOSITIONS, subclass 34, Ink, Stamping.

32. INK, INDELIBLE. Compositions for ink containing ingredients which resist attempts to wash out the ink by means of water or chemicals.

33. INK, FRAUD-PREVENTIVE. Compositions for ink to be used on stamps, bank-notes, drafts, checks, etc., to prevent fraud. They usually consist of sensitive or delebile ink, so that any attempt to remove the canceling-marks obliterates or changes the ink. Sometimes they consist of an ink of such color that the original cannot be successfully duplicated by photographing.

Search Class—

134—LIQUID COATING COMPOSITIONS, subclass 32, Ink, Indelible, for indelible inks which are used to prevent change in the original or to prevent removal of the canceling-mark.

34. INK, STAMPING. Compositions for non-drying ink for use on stamping-pads.

Search Class—

134—LIQUID COATING COMPOSITIONS, subclass 31, Ink, Copying.

35. INK, PRINTERS'. Compositions for printers' ink not classified in subclass 36 in this class. Under these two subclasses are included compositions for ink used with type, copper-plate, etc., and in lithography.

36. INK, PRINTERS', BITUMINOUS AND RESINOUS. Compositions for printers' ink containing ingredients of a bituminous or resinous nature. (See definition under subclass 3, Barrel-lining, Bituminous and resinous.)

Search Classes—

134—LIQUID COATING COMPOSITIONS, subclasses 3, Barrel-lining, Bituminous and resinous; 8, Leather coating and polishing, Bituminous and resinous; 13, Fabric coating and waterproofing, Bituminous and resinous; 21, Sizing, Bituminous and resinous; 26, Varnish; 41, Paint, Antifouling and insecticidal, Bituminous and resinous, and 51, Paint, Bituminous and resinous.

106—PLASTIC COMPOSITIONS, subclass 15, Electrical insulating, Bituminous and resinous.

CLASS 134—Continued.

37. **INK, WRITING.** Compositions for ink ordinarily used for writing with a pen.

Search Class—

134—LIQUID COATING COMPOSITIONS, subclass 32, Ink, Indelible.

38. **INK, WRITING, POWDERS.** Compositions which are kept in a powdered or solid state and which form writing-ink upon the addition of water.

Search Class—

106—PLASTIC COMPOSITIONS, subclass 5, Crayons and pencils.

39. **PAINT.** Miscellaneous compositions for paint. Under "Paint" and its subclasses are included compositions which when applied to the surface to be painted in a liquid condition and then exposed to the atmosphere will dry and leave behind a firm, hard, and opaque coating which may be more or less lustrous and capable of resisting the weather.

Note.—When the composition is of such a character that wood is immersed in it for a considerable length of time, so that it permeates the wood and acts on the sap, it is classified in class 99, PRESERVING, subclass 12, Wood saturation.

Search Class—

134—LIQUID COATING COMPOSITIONS, subclasses 2, Barrel-lining; 7, Leather coating and polishing, and 11, Fabric coating and waterproofing.

40. **PAINT, ANTIFOULING AND INSECTICIDAL.** Miscellaneous compositions for antifouling and insecticidal paint. Under these subclasses are included compositions for preventing the fouling of, or the action of insects upon, the surface coated therewith. They are used principally for coating marine structures and bottoms of ships and usually contain poisonous ingredients, such as salts of copper, mercury, and arsenic.

41. **PAINT, ANTIFOULING AND INSECTICIDAL, BITUMINOUS AND RESINOUS.** Compositions for antifouling and insecticidal paint except those containing tar and wax, which are in the next two subclasses. (See definition under subclass 3, Barrel-lining, Bituminous and resinous.)

42. **PAINT, ANTIFOULING AND INSECTICIDAL, BITUMINOUS AND RESINOUS, TAR.** Compositions for antifouling and insecticidal paint containing ingredients of a tarry nature.

43. **PAINT, ANTIFOULING AND INSECTICIDAL, BITUMINOUS AND RESINOUS, WAX.** Compositions for antifouling and insecticidal paint containing ingredients of a waxy nature.

44. **PAINT, FIREPROOF.** Compositions for fireproof paint except those containing soluble silicates, which are in the next subclass. Under these two subclasses are included compositions which contain ingredients whose purpose is to render fireproof the surfaces to which they are applied. These subclasses contain a few patents for fireproofing fabrics and wood which are not strictly in the nature of paint.

45. **PAINT, FIREPROOF, SOLUBLE SILICATES.** Compositions for paint which contain silicates of the alkaline metals, usually sodium or potassium and otherwise known as "water glass."

Search Class—

106—PLASTIC COMPOSITIONS, subclasses 14, Electrical insulating, Soluble silicates; 19, Heat insulating, Soluble silicates, and 30, Artificial stone, Soluble silicates.

46. **PAINT, DISTEMPER.** Compositions for paint made from pigments mixed with water to which some adhesive substance is usually added to fix it to the surface on which it is used. They are usually intended for application to plaster and include compositions commonly known as "calimine," "alabastine," and "whitewash."

47. **PAINT, LUMINOUS.** Compositions for paint which contain ingredients which give the paint the property of absorbing light when exposed thereto and of emitting it in the dark.

48. **PAINT, STAINS.** Compositions for staining which leave a coating on the material and for imitating the grain of wood.

Search Class—

134—LIQUID COATING COMPOSITIONS, subclass 24, Furniture polish.

49. **PAINT, FILLERS.** Compositions for filling and smoothing the surface to be painted before the main coat is applied.

50. **PAINT, PROTEIDS.** Compositions for paint containing ingredients which fall under the head of "Proteids." (See definition under subclass 12, Fabric coating and waterproofing, Proteids.)

Search Classes—

134—LIQUID COATING COMPOSITIONS, subclasses 12, Fabric coating and waterproofing, Proteids, and 20, Sizing, Proteids.

106—PLASTIC COMPOSITIONS, subclass 38, Proteids.

51. **PAINT, BITUMINOUS AND RESINOUS.** Compositions for paint other than antifouling and insecticidal containing ingredients of a bituminous or resinous nature, except those containing tar and wax, which are classified in subclasses 51 and 52 in this class. (See definition under subclass 3, Barrel-lining, Bituminous and resinous.) These three subclasses include compositions which are not true varnishes, but which contain resinous substances or varnish mixed with paint to form enamel-paint, which dries with a gloss, thus combining painting and varnishing into one operation.

CLASS 134—Continued.

Search Classes—

134—LIQUID COATING COMPOSITIONS, subclasses 3, Barrel-lining, Bituminous and resinous; 8, Leather coating and polishing, Bituminous and resinous; 13, Fabric coating and waterproofing, Bituminous and resinous; 21, Sizing, Bituminous and resinous; 26, Varnish; 36, Ink, printers', Bituminous and resinous, and 41, Paint, Antifouling and insecticidal, Bituminous and resinous.

106—PLASTIC COMPOSITIONS, subclasses 15, Electrical insulating, Bituminous and resinous, and 31, Artificial stone, Bituminous and resinous.

52. **PAINT, BITUMINOUS AND RESINOUS, TAR.** Compositions for paint containing ingredients of a tarry nature.

Search Classes—

134—LIQUID COATING COMPOSITIONS, subclasses 4, Barrel-lining, Bituminous and resinous, Tar; 14, Fabric coating and waterproofing, Bituminous and resinous, Tar, and 42, Paint, Antifouling and insecticidal, Bituminous and resinous, Tar.

106—PLASTIC COMPOSITIONS, subclasses 16, Electrical insulating, Bituminous and resinous, Tar, and 32, Artificial stone, Bituminous and resinous, Tar.

53. **PAINT, BITUMINOUS AND RESINOUS, WAX.** Compositions for paint containing ingredients of a waxy nature.

Search Classes—

134—LIQUID COATING COMPOSITIONS, subclasses 5, Barrel-lining, Bituminous and resinous, Wax; 9, Leather coating and polishing, Bituminous and resinous, Wax; 15, Fabric coating and waterproofing, Bituminous and resinous, Wax; 22, Sizing, Bituminous and resinous, Wax, and 43, Paint, Antifouling and insecticidal, Bituminous and resinous, Wax.

106—PLASTIC COMPOSITIONS, subclasses 17, Electrical insulating, Bituminous and resinous, Wax, and 33, Artificial stone, Bituminous and resinous, Wax.

54. **PAINT, RUBBER.** Compositions for paint containing rubber, caoutchouc, gutta-percha, balata, or other ingredients in the nature of rubber.

Search Classes—

134—LIQUID COATING COMPOSITIONS, subclass 17, Fabric coating and waterproofing, Rubber.

106—PLASTIC COMPOSITIONS, subclass 13, Electrical insulating, Rubber.

55. **PAINT, GELATINOUS AND GUMMY.** Compositions for paint containing ingredients of a gelatinous or gummy nature. (See definition under subclass 6, Barrel-lining, Gelatinous and gummy.)

Search Classes—

134—LIQUID COATING COMPOSITIONS, subclasses 6, Barrel-lining, Gelatinous and gummy; 10, Leather coating and polishing, Gelatinous and gummy; 16, Fabric coating and waterproofing, Gelatinous and gummy; 19, Sizing, Laundry starch and polish; 23, Sizing, Gelatinous and gummy, and 46, Paint, Distemper.

106—PLASTIC COMPOSITIONS, subclasses 36, Artificial stone, Gelatinous and gummy, and 39, Gelatinous and gummy.

56. **PAINT, VEHICLES.** Liquids with which pigments are intimately mixed for the production of paint. Includes paint-oils.

57. **PAINT, DRIERS.** Substances added to the paint to increase its drying or oxidizing power.

58. **PAINT, PIGMENTS.** Substances which are used to impart the characteristic color to paint. They are mixed in a powdered form with oil or other vehicle to form paint. In this respect they differ from dyes, which are employed in solution instead of in suspension.

Search Class—

75—METALLURGY, subclass 19, Furnaces, Pigment for processes and apparatus for the production of pigments by heating ores and metals and collecting the fumes.

59. **PAINT, PIGMENTS, IRON SALTS.** Inventions relating to the manufacture of iron-salt pigments and also compositions containing iron salts which are used as pigments.

60. **PAINT, PIGMENTS, LAMPBLACK.** Miscellaneous processes and apparatus used in the manufacture of lampblack.

61. **PAINT, PIGMENTS, LAMPBLACK, RECIPROCATING COLLECTOR-PLATE.** The collector-plate or depositing surface is reciprocated over the burners. Fixed scrapers may be used.

62. **PAINT, PIGMENTS, LAMPBLACK, RECIPROCATING SCRAPER.** Scrapers reciprocated adjacent to a fixed collector-plate or depositing-surface to remove the lampblack as it is formed.

63. **PAINT, PIGMENTS, LAMPBLACK, ROTATING BURNERS.** Burners rotate beneath a fixed collector-plate or depositing-surface. Scrapers usually rotate with the burners to remove the lampblack.

64. **PAINT, PIGMENTS, LAMPBLACK, ROTATING COLLECTOR-PLATE.** A collector-plate or depositing-surface is rotated over stationary burners. Fixed scrapers may be used.

65. **PAINT, PIGMENTS, LAMPBLACK, ROTATING CYLINDER.** A rotating cylinder is used as the depositing-surface. The burners may be arranged to deposit the lampblack upon either the external or the internal surface of the cylinder.

66. **PAINT, PIGMENTS, LAMPBLACK, SETTLING-CHAMBERS.** Settling-chambers for collecting lampblack.

CLASS 134—Continued.

67. **PAINT, PIGMENTS, LEAD SALTS.** Miscellaneous processes and apparatus used in the manufacture of lead-salt pigments, such as white lead. This subclass includes compositions containing lead salts which are used as pigments, also some oxids.
68. **PAINT, PIGMENTS, LEAD SALTS, ATTRITION PROCESS.** Lead particles are agitated so as to cause an attrition of the particles upon each other, the pulp thus produced usually in suspension in water being subjected to chemical action, depending upon the particular salt desired. Tumbling apparatus is usually employed.
69. **PAINT, PIGMENTS, LEAD SALTS, DRY PROCESS, CARRIER.** Metallic lead is placed on a carrier and subjected to the action of a vapor or spray as it is moved along.
70. **PAINT, PIGMENTS, LEAD SALTS, DRY PROCESS, STACK.** Metallic lead is stacked upon shelves or in pots and subjected to the action of a vapor or spray.
71. **PAINT, PIGMENTS, LEAD SALTS, DRY PROCESS, POTS.** Improvements in lead corroding pots.
72. **PAINT, PIGMENTS, LEAD SALTS, TREATING.** Includes the treating of the lead pigment after it has been produced, such as washing and cooling it.
73. **PAINT, PIGMENTS, LEAD SALTS, WET PROCESS, ALKALI.** Processes of producing lead pigments in which an alkali is used.
74. **PAINT, PIGMENTS, LEAD SALTS, WET PROCESS, AMMONIUM ACETATE.** Processes of producing lead pigments in which ammonium acetate is used.
75. **PAINT, PIGMENTS, LEAD SALTS, WET PROCESS, FRENCH.** In this process white lead is produced from a solution of basic acetate of lead by precipitation with carbon dioxide. This is also known as the "precipitation" process.

CLASS 134—Continued.

76. **PAINT, PIGMENTS, METALLIC POWDERS.** Pigments which consist of metals in powdered form.
77. **PAINT, PIGMENTS, ULTRAMARINE.** Processes and apparatus for making ultramarine.
78. **PAINT, PIGMENTS, ZINC SALTS.** Compositions which contain zinc salts and are used as pigments, such as zinc-white and lithopone. Also processes and apparatus for making the same.
79. **PYROXYLIN.** Compositions for coating containing pyroxylin, gunccotton, nitrocellulose, or collodion. Includes solvents which are used in making these compositions.
Search Class—
106—PLASTIC COMPOSITIONS, subclass 37, Pyroxylin.
80. **MISCELLANEOUS, TREATMENT.** Methods for making, compounding, and treating liquid coating compositions not included in the following subclasses. These four subclasses do not include processes of manufacturing the separate ingredients which may be used in making the composition. These are classified under the art to which they belong.
Search Class—
106—PLASTIC COMPOSITIONS, subclass 41, Miscellaneous, Treatment.
81. **VARNISH, TREATMENT.** Methods of treatment for making compositions for varnish.
82. **INK, TREATMENT.** Methods of treatment for making compositions for ink.
83. **PAINT, TREATMENT.** Methods of treatment for making compositions for paint.
Search Class—
106—PLASTIC COMPOSITIONS, subclasses 41, Miscellaneous, Treatment, and 44, Artificial stone, Treatment.

CLASS 135.—TENTS, CANOPIES, UMBRELLAS, AND CANES.

DEFINITIONS.

Class.

This class comprises portable coverings for protection from the weather which are formed of flexible material. There are also included frames and supports for the same and canes on account of the similarity of the last to umbrella-supporting sticks.

Rigid and rigidly-framed structures of a portable nature and flexible coverings using the article protected as a supporting-frame are found under class 108, ROOFS; subclasses 2, Adjustable, and 3, Portable, and in class 20, WOODEN BUILDINGS; subclasses 2, Buildings, Portable houses, and 3, Buildings, Portable houses, Voting-booths.

Awnings are found in class 156, CURTAINS, SHADES, AND SCREENS, subclass 15, Awnings, unless there is also an independently-supported canopy portion complete as such without the wall attachment.

In general, combinations of canes with other articles are classified with these articles unless they are merely received within or supported upon the cane.

Subclasses.

1. TENTS. Portable lodges for protection from the weather which are covered with flexible material. They are distinguished from portable houses by the absence of rigid panels in the side-wall construction and usually also by the flexibility of the roof-covering. They differ from canopies in the extent of the protection furnished and usually also in the method of stretching the covering. Tents have more or less complete side walls, and the covering is generally stretched by means outside of the tent-frame.

2. TENTS, UMBRELLA TYPE. Tent structures mounted upon a central standard and held extended by pivoted ribs.

3. TENTS, FRAMES. Tent-frames and such frames intended primarily for canopies as are equally adapted for tent support.

Note.—Where the frame-sections are themselves panels, they are classified in class 20, WOODEN BUILDINGS, subclass 2, Buildings, Portable houses, and the subclasses thereunder, even though they have tent-like flexible tops.

Note.—Ridge-poles suitable for A-shaped tent-supports occur in class 5, BEDS, subclass 32, Hammocks, Supports.

4. TENTS, FRAMES, FOLDING. Frame structures formed in sections which are hinged together. They differ from the folding structures of class 20, WOODEN BUILDINGS, subclass 2, Buildings, Portable Houses, in that the latter are made of sections which are themselves panels, while in the former the sections are not panels.

Note.—For rib-supported structures, folding about a single standard, see also subclass 2, Tents, Umbrella Type, in this class.

5. CANOPIES. Miscellaneous sun and rain protections of a portable nature which, as opposed to portable and adjustable roofs, are both supported independently of the material covered and provided with a flexible covering. They are distinguished from tents by the fact that the former act as shades or shelters over or upon one side of the object to be protected rather than entire covers. Awning structures are here included whenever the entire roof structure or a section thereof is supported independently of any wall attachment.

6. CANOPIES, BOAT. Canopies applied to boat use.

7. CANOPIES, BICYCLES. Sun and rain protecting-coverings for the rider which are mounted upon the bicycle or similar vehicle.

8. CANOPIES, HANGING COVERS. Suspended coverings which inclose the objects to be protected.

Note.—Where the protection is from insects, the structures are classified under class 5, BEDS, subclass 14, Mosquito-nets and Canopies.

9. CANOPY-SUPPORTS. Miscellaneous supports for canopies. Note.—Those supports which are provided with clamps or sockets to receive and hold an ordinary umbrella-stick will be found under subclass 13, Umbrella-supports. Umbrella and cane sticks are also found elsewhere in this class.

Note.—Where the support also holds a hammock which the canopy is intended to cover, it is placed in class 5, BEDS, subclass 32, Hammocks, Supports.

Search Class—

135—TENTS, CANOPIES, UMBRELLAS, AND CANES, subclasses 5, Canopies, and 7, Canopies, Bicycle.

10. CANOPY-SUPPORTS, BABY-CARRIAGE. Structures for supporting and adjusting baby-carriage parasols. The parasol is mounted upon a single bow support, which may be fastened either at one or both ends to the body of the vehicle.

Note.—Where there is a plurality of independent supports from the carriage-body or a bow construction hinged at each end upon the body, the device is classified in class 21, CARRIAGES AND WAGONS, subclass 62, Tops.

CLASS 135—Continued.

11. CANOPY-SUPPORTS, BICYCLE. Attachments by which canopies are held upon a bicycle or similar vehicle when there is no invention in the canopy.

Search Class—

135—TENTS, CANOPIES, UMBRELLAS, AND CANES, subclass 7, Canopies, Bicycle.

12. CANOPY-SUPPORTS, BODY-HARNESS. Means for attachment of a canopy to the person of the one to be protected.

13. UMBRELLA-SUPPORTS. Standards or brackets which terminate in a socket or clamp adapted to receive and hold an umbrella handle or stick.

Search Class—

135—TENTS, CANOPIES, UMBRELLAS AND CANES, subclass 12, Canopy-Supports, subclass 12, Body-Harness.

14. TENTS, HEATERS, LIGHTERS, VENTILATORS, AND DOORS. Inventions peculiar to the heating, lighting, and ventilation of tents.

Note.—Such heaters as do not form a combination with the tent structure and stovepipe-thimbles not intended to act also as ventilators are both found under class 126, STOVES AND FURNACES.

15. TENTS, PEGS, POLES, AND COVER-FASTENINGS. Improvements in these several parts that are peculiar to tents.

Note.—Cover-fastenings used in connection with the door of the tent or with a ventilator are placed in this class under subclass 14, Tents, Heaters, Lighters, Ventilators, and Doors.

16. UMBRELLAS, COMBINED. Combinations of umbrellas with other articles than canes or in addition to them.

17. UMBRELLAS, COMBINED, UMBRELLAS AND CANES. Combined structures not otherwise herein classified and not including any other mechanism in the combination.

Note.—The majority use the inclosing cases as a stick and slide an adjustable runner upon it.

18. UMBRELLAS, COMBINED, UMBRELLAS AND CANES, IMITATION CANE-CASE. Cane-like cases which are removed when the umbrella is to be used.

19. UMBRELLAS, COMBINED, UMBRELLAS AND CANES, INDEPENDENT-STICK. The entire umbrella is here placed within the cane-case when not in use, but is mounted upon it for use. The invention generally lies in the method of mounting the umbrella-stick upon the end of the cane. The umbrella-runner in no instance travels upon the cane.

20. UMBRELLAS. Stick-supported easily-portable structures of the canopy type folding about the stick. They are usually supported from the stick by stretchers.

Note.—Canopies for bicycles and more rigid or less-easily-portable structures will be found in this class under subclasses 5, Canopies, and 7, Canopies, Bicycle, respectively.

Note.—Inventions relating to the stick will be found in this class under subclass 45, Canes and sticks, if equally adapted to cane use, and under subclass 46, Canes and sticks, Umbrella-sticks, if limited to umbrella use.

21. UMBRELLAS, SUSPENDED. Umbrellas which are supported from a point above or within the raised frame, as by a projecting stick-tip or an extended rib. The invention lies in the umbrella as distinguished from the support.

22. UMBRELLAS, SELF OPENING AND CLOSING. Umbrellas which are automatically opened or closed. The means here employed is usually a spring within or surrounding the stick and acting upon the runner.

23. UMBRELLAS, SELF OPENING AND CLOSING, TENSIONED RIB AND STRETCHER. Self opening and closing umbrellas where the means of operation is by a tension device operating upon the ribs or stretchers to draw them toward and hold them in position.

24. UMBRELLAS, SELF OPENING AND CLOSING, HANDLE-RELEASE. Self opening and closing umbrellas in which the catch which retains the frame in its open or closed position is released by mechanism operated from a distant point, usually at or near the handle.

25. UMBRELLAS, FOLDING. In the umbrella classification "folding" means capable of reduction in length of frame and involves a shortening of the rib. In this subclass are found folding and separable rib-sections. Lazy-tongs frame constructions and locking mechanisms for securing the sections together are also found here.

Note.—Various constructions for shortening the stick appear here; but when the invention lies in this feature alone it will be found in this class under subclass 46, Canes and sticks, Umbrella-Sticks.

CLASS 135—Continued.

26. **UMBRELLAS, FOLDING, SLIDING-RIB.** Folding umbrellas in which the shortening of the rib is accomplished by forming it in sections which slide one upon or within the other. Locking mechanisms for the rib-sections are also included.

Note.—Various stick-shortening mechanisms occur here; but when the invention lies in this feature alone it will be found in this class under subclass 46, Canes and Sticks, Umbrella-Sticks.

27. **UMBRELLAS, AUXILIARY FRAME-BRACE.** Structures in addition to or independent of the ordinary complement of ribs and stretchers used for the purpose of stiffening the frame.

Note.—This does not include locking mechanisms for rib-sections of folding umbrellas, which will be found in this class, subclass 25, Umbrellas, Folding; nor does it include tensioned rib or stretcher devices, which will be found in this class, subclass 31, Umbrellas, Ribs and stretchers.

Search Class—

135—TENTS, CANOPIES, UMBRELLAS, AND CANES, subclass 22, Umbrellas, Self Opening and Closing.

28. **UMBRELLAS, RUNNERS AND NOTCHES.** Inventions in the structure of the cylindrical movable and fixed supports to which the inner ends of the stretchers and ribs are respectively pivoted. These inventions are entirely independent of said pivot-joint or merely for the purpose of mounting the parts forming the joint without restricting its character.

29. **UMBRELLAS, RIB AND STRETCHER JOINTS.** The mechanisms by which ribs and stretchers are connected at their inner ends to the notches and runners, respectively, with such modifications of the meeting parts as contribute to the joint.

30. **UMBRELLAS, RIB AND STRETCHER JOINTS, T-HEAD AND SOCKET.** Joints in which a slot or other opening in the runner or notch receives and retains a T-head mounted upon the inner end of the stretcher or rib, while permitting motion of the stretcher or rib along the length of the slot. Modifications of the meeting parts to form the joint are also included.

31. **UMBRELLAS, RIBS AND STRETCHERS.** Structures of the body of the rib or stretcher as distinguished from rib-tips and from such modifications as are necessary to form a joint.

Note.—Rib-tips are found in this class under subclass 36, Umbrellas, Rib-tips, top-protectors, and fasteners, if permanently attached, and under subclass 34, Umbrellas, Covers, linings, and cases, Covers and linings, detachable, if removable.

Note.—Modifications to form the several joints will be found in this class under subclasses 25, Umbrellas, Folding; 26, Umbrellas, Folding, Sliding-rib; 29, Umbrellas, Rib and stretcher joints; 30, Umbrellas, Rib and stretcher joints, T-head and socket; and 32, Umbrellas, Geats.

32. **UMBRELLAS, GEATS.** The geat is the attachment to or formation of the rib at or near its center to provide for a joint with the stretcher. This subclass, however, includes also the joints themselves and such modifications of the rib or adjoining end of the stretcher as are made necessary by the joint.

Search Class—

135—TENTS, CANOPIES, UMBRELLAS, AND CANES, subclasses 25, Umbrellas, Folding; 26, Umbrellas, Folding, Sliding-rib, and 31, Umbrellas, Ribs and stretchers.

33. **UMBRELLAS, COVERS, LININGS, AND CASES.** Devices where the invention lies in these parts themselves or in which the method of attachment depends largely upon modification of their structure.

34. **UMBRELLAS, COVERS, LININGS, AND CASES, COVERS AND LININGS, DETACHABLE.** Covers and linings so held in place as to be readily releasable and which can be replaced by unskilled labor. The detachable fastenings are also placed here.

35. **UMBRELLAS, COVERS, LININGS, AND CASES, SIGHT-OPENINGS AND VENTILATORS.** Devices in or in connection with the cover by means of which an increased view or better circulation of air is obtained.

36. **UMBRELLAS, RIB-TIPS, TOP-PROTECTORS, AND FASTENERS.** Rib-tips, mechanisms for permanently fastening the cover or lining thereto or to the rib or stretcher, and protectors for the joint between the cover and the notch.

Search Class—

135—TENTS, CANOPIES, UMBRELLAS, AND CANES, subclass 34, Umbrellas, Covers, linings, and cases, Covers and linings, detachable, and subclass 48, Umbrellas, Drip-cups, for removable fastenings for retaining detachable covers or linings upon the frame.

CLASS 135—Continued.

37. **UMBRELLAS, RETAINERS.** Devices by which the umbrella is held in an open or closed position. In this subclass the devices usually engage the rib or stretcher frictionally or by spring tension.

Note.—Where the retaining means is a spring which acts also to open or close the frame, look in this class under subclass 23, Umbrellas, Self opening and closing, Tensioned rib and stretcher.

38. **UMBRELLAS, RETAINERS, RUNNER.** Means for fastening the umbrella in an open or closed position by preventing movement of the runner.

Note.—Where the means used also acts to open or close the umbrella, it will be found in this class under subclass 22, Umbrellas, Self opening and closing.

39. **UMBRELLAS, RETAINERS, RUNNER, SLIDING.** Here a sleeve is mounted upon or within the runner and is moved longitudinally to release the retaining-catch.

40. **UMBRELLAS, RETAINERS, RUNNER, SPRING.** Spring-catches placed usually in the stick.

Note.—Many of these used for the purpose of retaining telescopic stick-sections are shown in this class under subclasses 25, Umbrellas, Folding, and 26, Umbrellas, Folding, Sliding-rib, in which search should be made; also, in subclass 24, Umbrellas, Self opening and closing, Handle-release.

41. **UMBRELLAS, RETAINERS, RUNNER, SPRING, MODIFIED RUNNER.** Spring runner-retainers in which the runner is modified in some other way than to permit turning and so as to accommodate the catch or releasing mechanism.

42. **UMBRELLAS, RETAINERS, RUNNER, STICK-HINGE LOCKED.** Devices in which the runner can pass a hinge in the supporting-rod freely when the sections are in line, but is retained by a projecting part of the lower member when the hinge is turned.

43. **UMBRELLAS, RETAINERS, RUNNER, TURNING.** Retainers in which either the runner or a sleeve upon it is turned to set or open the runner-fastening or to lock or unlock the same in any position.

44. **UMBRELLAS, RETAINERS, TIP.** Annular retainers surrounding the rib-tips when the umbrella is closed. They are distinguished from umbrella-ties in that the latter are of general belt form, loosely attached or separate, and embrace the cover as well as the ribs. The tip-retainers are usually rigid and permanently attached. They are sometimes mounted upon the runners, are frequently spring-actuated, and usually slide or turn to place.

45. **CANES AND STICKS.** Here are found stick and handle structures either adapted for canes alone or equally useful also in umbrellas.

46. **CANES AND STICKS, UMBRELLA-STICKS.** Sticks and handles which are adapted particularly to umbrella use, as by a construction to accommodate a notch or by the removability of the handle. Here will be found folding, telescoping, and separable rod sections and the various catches and joints by which they are rigidly united for use.

Note.—Subclasses 22, Umbrellas, Self opening and closing; 25, Umbrellas, Folding, and 26, Umbrellas, Folding, Sliding-rib, all in this class, contain sticks modified for umbrella use and should be searched to complete a search in this subclass.

47. **CANES AND STICKS, MODIFICATIONS AND ATTACHMENTS.** Cane structures used for mere storage of articles or upon which articles or attachments are mounted; also, combined structures where the cane forms the basis of the invention or where the invention consists alone in the assemblage of the several articles in one structure without much modification of either.

Note.—Combinations with billiard-cues, fishing-rods, guns, head-rests, music-stands, seats, sounding toys, store-goods lifters, tripods, whips, and umbrellas will be found in the several classes in which these articles belong.

Search Classes—

135—TENTS, CANOPIES, UMBRELLAS, AND CANES, subclasses 16, Umbrellas, Combined; 17, Umbrellas, Combined, Umbrellas and canes; 18, Umbrellas, Combined, Umbrellas and canes, Imitation cane-case, and 19, Umbrellas, Combined, Umbrellas and canes, Independent-stick.

42—FIRE ARMS, subclass 52, Cane-guns.

135—CHAIRS, subclass 42, Stools, Cane.

48. **UMBRELLAS, DRIP-CUPS.** Receptacles carried upon the umbrella for the purpose of catching the drip from the cover.

CLASS 140.—WIRE-WORKING.**DEFINITIONS.***Class.*

This class is limited to wire-working and includes only patents for such inventions as relate—

1. To the working of wire into different shapes or forms by bending or twisting it into specific articles or fabrics.
2. To devices for applying wire to articles—such as bottles and corks, belts, making card-clothing, etc.—but excluding winding devices, now classified in class 242, WINDING AND REELING.
3. To devices for cutting, feeding, straightening, and tensioning wire in which such features alone are claimed and are not otherwise classifiable.

The patents in this class are generally for apparatus—i. e., machines and implements for working wire. There are also patents for processes (other than article processes), classifiable in the machine subclasses. Many of the subclasses of this class are therefore designed to receive both machines or tools and processes, in which case the introductory portions of the definitions of such subclasses are made participial in form—as, for example, subclass 93, Applying wire, “Applying wire, etc.”

The class of wire-working is miscellaneous, and includes all inventions in wire-working except those more appropriately classifiable in other specific classes. It excludes wire articles or manufactures *per se* and article processes classifiable with the article.

Inventions in the manufacture of wire are classifiable in the appropriate metal-working classes, depending upon the character of the method of production.

In class 153, METAL-BENDING, subclass 64, Coiling, and the subclasses thereunder, are wire-coiling devices other than those classifiable in the article making or forming subclasses of this class, (subclass 71, Article making or forming, and the subclasses thereunder.)

Note.—See search note to subclass 3, Fabric-making, in this class.

Subclasses.

1. **COMBINED MACHINES.** Inventions in the working of wire in which other features not specific to wire-working are claimed in combination therewith or such inventions as do not come within the terms of the subclasses hereinafter defined because of the inclusion of elements, combinations, or features not in themselves classifiable in such subclasses, but usually in some other class.

Also inventions in wire-working or in elements of combinations specific to this class in combination with features or means specific to metal casting, swaging, welding, metal-rolling, nailing, stapling, painting, etc., since in these instances the class of Wire-working is made superior.

2. **MISCELLANEOUS.** Miscellaneous inventions in wire-working not classifiable in any of the other subclasses of this class.

Search Classes—

29—METAL-WORKING, subclass 90, Burnishing, and 51, GRINDING AND POLISHING, subclass 15, Metal, Sheet metal and wire, for devices for burnishing or planishing wire.

3. **FABRIC-MAKING.** Miscellaneous fabric-making inventions not classifiable in the subclasses hereunder. Wire-fabric making devices classifiable in this class are divided into two main groups, including, respectively, looms or stationary machines and portable or field machines. Each of these groups is redivided into other groups, including, respectively, devices for making a mesh fabric in which continuous wire or wires are interwoven or united with the warp wires and devices in which the completed fabric shows separate cross wires or stays. Devices of the latter type are classifiable under the stay-applying group defined below.

Note.—Inventions in wire-fabric making classifiable in this class are characterized by working in the wires by twisting, coiling, or by some bending operation which is not characteristic or usual in the ordinary weaving machines that operate upon cotton, wool, silk, etc.

Search Class—

139—WEAVING, subclass 39, Looms, Wire, for wire-loom machines for making the ordinary straight weave all-wire fabrics.

4. **FABRIC-MAKING, ROTARY MACHINES.** Fabric-making machines comprising a rotary device, as a drum or wheel, upon which the fabric wires or elements are secured together during its rotation.

5. **FABRIC-MAKING, ALL-WIRE, MULTIPLE STRAND.** Making an all-wire fabric in which a plurality of warp or runner strands are secured together, usually by twisting, to form a cable, and to which the wool, stay, or cross wires are secured.

6. **FABRIC-MAKING, ALL-WIRE, HEXAGONAL MESH.** Making an all-wire fabric having hexagonal meshes, like chicken-wire or poultry-netting. In the mesh made by the devices of this subclass the cross wires are continuous and are not cut.

Search Class—

140—WIRE-WORKING, the stay-applying subclasses, for machines in which the cross wires are cut, thus forming separate wool-wires or stays.

CLASS 140—Continued.

7. **FABRIC-MAKING, ALL-WIRE, QUADRANGULAR MESH.** Making all-wire net fabric having quadrangular or four-sided meshes.

Search Classes—

140—WIRE-WORKING, subclass 4, Fabric-making, Rotary machines; subclass 5, Fabric-making, All-wire, Multiple strand, for fabric-making machines in which the warps or runners are composed of a plurality of strands secured together, for example, by twisting.

22—METAL-FOUNDING, subclass 59, Casting apparatus, Composite castings and joints, Fence and net leading, for machines or devices for joining wires by metal-founding means or for casting a metal joint upon the intersection of the wires, especially in fabric-making.

8. **FABRIC-MAKING, ALL-WIRE, QUADRANGULAR MESH, COILED.** Making all-wire mesh fabric or netting by coiling.

Search Class—

153—METAL-BENDING, subclass 64, Coiling, or appropriate subclasses thereunder, for devices for making a single coil though used in fabric-making.

9. **FABRIC-MAKING, ALL-WIRE, DIAMOND MESH.** Making wire netting having diamond or V-shaped meshes, the cross wire or wires being continuous in distinction from those inventions for the making of diamond mesh fabric where the wires are not continuous.

Search Class—

140—WIRE-WORKING, the Fabric-making, Stay-applying subclasses, for inventions involving cutting the wires to form stays or working in separate wires as stays.

10. **FABRIC-MAKING, ALL-WIRE, STAY-APPLYING.** Securing wire stays or separate cross wires to the runners, strands, or warp wires of wire netting not classifiable in the subclasses of this group defined below.

Note.—In this group are classifiable all devices wherein the so-called “stays” are formed by cutting the cross wire at the edges of the fabric.

Search Class—

140—WIRE-WORKING, subclasses 6, Fabric-making, All-wire, Hexagonal mesh; 7, Fabric-making, All-wire, Quadrangular mesh; 8, Fabric-making, All-wire, Quadrangular mesh, Coiled, and 9, Fabric-making, All-wire, Diamond mesh, for mesh-making machines employing continuous cross or wool wires, etc.

11. **FABRIC-MAKING, ALL-WIRE, STAY-APPLYING, CLIP-JOINING.** Applying clips, tie-wires, or equivalent, whether of wire or sheet metal, to the intersecting wires of a wire fabric and by which they are secured together. Also magazines for clips or feeding devices relating to all-wire fabric-making.

Search Class—

140—WIRE-WORKING, subclass 20, Fabric-making, All-wire, Portable machines, Stay-applying, Clip-joining, for similar devices in portable machines; subclass 116, Joining wire, Tying-dies, for dies employed in machines for applying the wires to intersecting wires, as in fence fabrics; subclasses 53, Fabric-making, Implements, Magazine; 54, Fabric-making, Implements, Magazine, Revolvable head, and 55, Fabric-making, Implements, Clip-affixing, for clip-affixing implements.

12. **FABRIC-MAKING, ALL-WIRE, STAY-APPLYING, WRAPPED LOOP.** Making all-wire fabric by wrapping or otherwise securing suitable loops formed in stay wires about the strand wires.

Search Class—

140—WIRE-WORKING, subclass 21, Fabric-making, All-wire, Portable machines, Stay-applying, Wrapped loop.

13. **FABRIC-MAKING, ALL-WIRE, STAY-APPLYING, SHORT STAY.** Making an all-wire quadrangular, usually square, mesh fabric in which the cross wires or stays are composed of short lengths each connecting a plurality of strands, usually two, said lengths together forming a “sectional stay.”

Note.—This subclass is intended to include all looms or fixed machines utilizing short stays or cross wires of short length.

Search Class—

64—JOURNAL-BOXES, PULLEYS, AND SHAFTING, subclass 5, Belt-tighteners, for take-ups similar to devices employed in this subclass.

14. **FABRIC-MAKING, ALL-WIRE, STAY-APPLYING, LOOPEO STRAND.** Fabric-making in which suitable loops are formed in the warp or strands, usually for the purpose of securing the stays therein.

Search Class—

140—WIRE-WORKING, subclass 22, Fabric-making, All-wire, Portable machines, Stay-applying, Looped strand.

15. **FABRIC-MAKING, ALL-WIRE, STAY-APPLYING, SUCCESSIVELY WRAPPED STAY.** Making fabric by wrapping or coiling the stay wires successively around the strands, usually commencing at one of the edge strands, and coiling the stay successively about each runner and securing the end of the stay to the strand on the opposite edge of the fabric.

CLASS 140—Continued.

Search Class—

140—WIRE-WORKING, subclasses 53, Fabric-making, Implements, Magazine, and 54, Fabric-making, Implements, Magazine, Revolvable head, for implements employed in making fabrics in this manner; subclass 117, Joining wire, Implements, for hand tools for coiling or winding one wire about another, as in successively wrapping a stay about the several fence strands.

16. FABRIC-MAKING, ALL-WIRE, PORTABLE MACHINES. Portable machines for making all-wire netting. For example, all machines employed in the field are classifiable in this group.

Search Class—

140—WIRE-WORKING, subclasses 52, Fabric-making, Implements, for devices adapted to be held in the hand or partially supported by the work; and 117, Joining wire, Implements, and the subclasses thereunder, for devices of more general application, as in joining wires. Subclass 117 includes all implements for coiling one wire about another, as in successively wrapping stays.

17. FABRIC-MAKING, ALL-WIRE, PORTABLE MACHINES, MESH-MAKING. Portable all-wire fabric-making machines that make an all-wire netting in which the wires employed are practically continuous and separate or so-called stays are not separately interwoven or secured to the strands or the cross wires or in which the cross wire is not subsequently cut at the edge of the fabric.

Search Class—

140—WIRE-WORKING, subclasses 6, Fabric-making, All-wire, Hexagonal mesh, and 7, Fabric-making, All-wire, Quadrangular mesh, for looms or stationary machines for making similar fabrics.

18. FABRIC-MAKING, ALL-WIRE, PORTABLE MACHINES, STAY-APPLYING. Portable machines for securing separate wires or stays to the warp, strands, or runners and not classifiable in the minor subclasses of this group. Stay-applying machines operate to secure separate cross wires or stays to the warp wires or strands, or the cross wires are cut at the edge of the fabric, thus forming separate stays.

19. FABRIC-MAKING, ALL-WIRE, PORTABLE MACHINES, STAY-APPLYING, MULTIPLE STRAND. Portable stay-applying machines that twist or unite a plurality of strands together either in making and securing a multistrand stay to the warp wires or for securing wire stays, single or multiple, to a multistrand runner or warp.

Search Class—

140—WIRE-WORKING, subclass 5, Fabric-making, All-wire, Multiple strand, for fixed machines or looms that secure stay wires to a multistrand runner or warp.

20. FABRIC-MAKING, ALL-WIRE, PORTABLE MACHINES, STAY-APPLYING, CLIP-JOINING. Portable machines for securing stays to the strands by means of clips or tie-wires.

Search Class—

140—WIRE-WORKING, subclass 11, Fabric-making, All-wire, Stay-applying, Clip-joining, for similar structural features; subclass 116, Joining wire, Tying-dies, for dies employed in machines for applying tie-wires to intersecting wires.

21. FABRIC-MAKING, ALL-WIRE, PORTABLE MACHINES, STAY-APPLYING, WRAPPED LOOP. Portable stay-applying machines that secure the stays in place by wrapping or coiling loops suitably formed in the stay about the strand wires.

Search Class—

140—WIRE-WORKING, subclass 12, Fabric-making, All-wire, Stay-applying, Wrapped loop, for similar features in looms.

22. FABRIC-MAKING, ALL-WIRE, PORTABLE MACHINES, STAY-APPLYING, LOOPED STRAND. Portable fabric-making machines that form loops or kinks in the strands or warps and by which the stays are secured in place, each loop usually embracing a stay.

Search Class—

140—WIRE-WORKING, subclass 14, Fabric-making, All-wire, Stay-applying, Looped strand, for looms having like features.

23. FABRIC-MAKING, ALL-WIRE, PORTABLE MACHINES, STAY-APPLYING, SUCCESSIVELY WRAPPED STAY. Portable fabric-making machines that secure the stays to the strands by wrapping or coiling operations, each stay being successively wrapped around the strands in crossing the fabric, thus securing them in place.

Search Class—

140—WIRE-WORKING, subclasses 15, Fabric-making, All-wire, Stay-applying, Successively wrapped stay, for looms that operate in like manner; 53, Fabric-making, Implements, Magazine, and 54, Fabric-making, Implements, Magazine, Revolvable head, for implements employed in making fabrics in this manner; 117, Joining wire, Implements, for hand tools for coiling or winding one wire about another, as in successively wrapping a stay about the several fence strands.

24. FABRIC-MAKING, ALL-WIRE, EDGE-STRAND BINDING. Inventions in making selvages or binding the edge strands or in coiling or knotting the ends of the stays to the edge strands of the fabric, and machines and attachments for, or specific structures or combinations in, all-wire fabric-making devices.

Search Class—

140—WIRE-WORKING, subclass 14, Fabric-making, All-wire, Stay-applying, Looped strand, for similar features.

CLASS 140—Continued.

25. FABRIC-MAKING, SLAT-AND-WIRE. Inventions in or devices, looms, or stationary machines for making a slatted wire fabric—such as a picket or slatted wire fence, barrel fabric, basket fabric, etc.—and not classifiable in the minor subclasses defined below. The term “slat” is used in a generic sense to include wood, metal, etc., or any other material except wire.

Search Classes—

140—WIRE-WORKING, appropriate subclasses of all-wire machines, for machines for forming wire pickets or stays into a fabric; subclass 3, Fabric-making, and those under Fabric-making, All-wire, for such similar structural features as are also characteristic of looms; the search note to subclass 28, Fabric-making, Slat-and-wire, Dummy-spacing, for slat-and-wire fabric-weaving machines.

1—NAILING AND STAPLING, subclasses 11, Box, Staple forming and setting, and 14, Machines, Box, Assembling and nailing, for the making of slatted wire fabric by stapling.

139—WEAVING, subclasses 2, Looms, Basket; 32, Looms, Slat, cane, and straw, and 39, Looms, Wire.

26. FABRIC-MAKING, SLAT-AND-WIRE, SLAT-CUTTING. Slat-and-wire fabric-making involving the cutting of the slats to determinate lengths or trimming or shaping the same.

27. FABRIC-MAKING, SLAT-AND-WIRE, MAGAZINE. Slat-and-wire fabric-making machines provided with hoppers or any type of magazine for holding, supplying, or feeding the slats or pickets to the machine.

28. FABRIC-MAKING, SLAT-AND-WIRE, DUMMY-SPACING. Slat-and-wire machines having means for forming spaces between the slats at predetermined points by the omission of a slat or by the prevention of slat-feeding at the proper time. This subclass includes machines particularly adapted to the manufacture of barrel fabric.

Search Class—

147—COOPERING, subclasses 1, Barrel-making machines, for machines for making barrel or basket fabric by stapling the staves to wire; 47, Basket forming and nailing, and 48, Basket-forming.

29. FABRIC MAKING, SLAT-AND-WIRE, MOVABLE CARRIAGE. Machines having lifting frames or other movable carriages for relatively and periodically placing the slats, strands, or operating mechanism in securing relation—for example, moving the strand-twisting heads periodically into engagement with the strands to be twisted or coiled about the slats.

Search Class—

140—WIRE-WORKING, subclasses 32, Fabric-making, Slat-and-wire, Strand-twisting, Beaters, and 44, Fabric-making, Slat-and-wire, Portable machines, Strand-twisters, Eccentric type, for slat “beaters” or slat-placing mechanism.

30. FABRIC-MAKING, SLAT-AND-WIRE, STRAND-TWISTING. Inventions in fabric-making wherein the slats are secured by the mutual twisting together of the two or more strands of which a warp or runner is composed and not classifiable in the minor subclasses defined below.

Search Class—

140—WIRE-WORKING, subclasses 52, for implements specific to wire-fabric making; 118, Joining wire, Implements, Twisters, and the subclasses thereunder, and 121, Joining wire, Implements, Plier type, for implements employed in uniting intersecting fence strands by coiling in the making of slatted wire fabrics; and 54, Fabric-making, Slat-and-wire, Strand-coiling, for machines for coiling one of the strands about another or winding a continuous binding wire around a strand.

31. FABRIC-MAKING, SLAT-AND-WIRE, STRAND-TWISTING, EMBEDDING. Looms or stationary machines having means for embedding the fabric wires or stays in the slats, usually by the provision of suitable pressure rollers or hammers.

32. FABRIC-MAKING, SLAT-AND-WIRE, STRAND-TWISTING, BEATERS. Strand-twisting slat-and-wire fabric machines provided with means for beating or hammering the slats to place in the crotch between the strands.

Search Class—

140—WIRE-WORKING, subclass 42, Fabric-making, Slat-and-wire, Portable machines, Strand-twisters, Beaters, for beaters in portable machines; also subclass 31, Fabric-making, Slat-and-wire, Strand-twisting, Embedding.

33. FABRIC-MAKING, SLAT-AND-WIRE, STRAND-TWISTING, SPREADERS. Devices, usually separate from and employed in connection with strand-twisting machines, for separating or keeping the strands apart or from twisting exterior to or in advance of the twister-heads during the twisting operation.

34. FABRIC-MAKING, SLAT-AND-WIRE, STRAND-COILING. Making slatted wire fabric in which the slats are secured to the strands by the coiling or winding of one strand about the other, one only of the runner strands being bent or coiled, the other remaining substantially straight, or a smaller so-called “binding” or continuous tie-wire may be used and coiled about the strand between the slats, thus securing the latter in place.

Search Class—

140—WIRE-WORKING, subclasses 49, Fabric-making, Slat-and-wire, Portable machines, Tie-wire appliers, for machines that operate to secure the slats by securing separate pieces of wire or “tie-wires” to the strands embracing the slats; and 57, Fabric-making, Implements, Slat-attaching, Tie-wire appliers, for implements for the same purpose.

CLASS 140—Continued.

35. **FABRIC-MAKING, SLAT-AND-WIRE, WEAVERS.** Looms for making slatted wire fabric or fencing by wire-crossing mechanism.

NOTE.—See Search card data under subclass 25, Fabric-making, Slat-and-wire.

Search Classes—

- 139—WEAVING, for devices for ordinary weaving in the making of an all-wire fabric.
- 147—COOPERING, subclasses 47, Basket forming and nailing, and 48, Basket-forming.
36. **FABRIC-MAKING, SLAT-AND-WIRE, TWISTER-HEADS.** Twister-heads of the kind employed in wire-fabric making machines.
- Search Classes—
- 140—WIRE-WORKING, subclasses 114, Joining wire, Machines, Interlocking eyes, making; 115, Joining wire, Machines, Revolvable head, and 119, Joining wire, Implements, Twisters, Revolvable head, for similar heads employed in machines for twisting or coiling the ends of wires together.
- 56—HARVESTERS, subclasses 87, Self-binders, Twisters and tuckers, and 88, Self-binders, Wire-twisters.
- 118—SPINNING, subclass 14, Twisting-heads.
37. **FABRIC-MAKING, SLAT-AND-WIRE, PORTABLE MACHINES.** Portable devices or machines employed in the field (mostly fence machines) for making slatted wire fabric and not classifiable in the minor subclasses defined below.
- Search Class—
- 140—WIRE-WORKING, subclass 52, Fabric-making, Implements, and the subclasses thereunder, for implements or tools adapted to be held in the hand or partially supported by the work.
38. **FABRIC-MAKING, SLAT-AND-WIRE, PORTABLE MACHINES, MAGAZINE.** Portable machines having slat holders, hoppers, or equivalent magazine for the supply of slats.
- Search Class—
- 140—WIRE-WORKING, subclass 27, Fabric-making, Slat-and-wire, Magazine.
39. **FABRIC-MAKING, SLAT-AND-WIRE, PORTABLE MACHINES, STRAND-TWISTERS.** Portable machines having strand-twisting devices for mutually twisting the strands together to secure slats in place between them.
- Search Class—
- 140—WIRE-WORKING, subclass 30, Fabric-making, Slat-and-wire, Strand-twisting, and the subclasses thereunder, for similar features in looms.
40. **FABRIC-MAKING, SLAT-AND-WIRE, PORTABLE MACHINES, STRAND-TWISTERS, SLAT ADJUSTMENT.** Machines provided with means for placing the slats in definite relation either laterally, longitudinally, or angularly.
- Search Class—
- 140—WIRE-WORKING, subclass 41, Fabric-making, Slat-and-wire, Portable machines, Strand-twisters, Plumb adjustment, for portable machines having plumbing or leveling devices.
41. **FABRIC-MAKING, SLAT-AND-WIRE, PORTABLE MACHINES, STRAND-TWISTERS, PLUMB ADJUSTMENT.** Portable slat-and-wire fabric-making machines having strand-twisters in which means are provided for the angular adjustment thereof or for positioning the slats relatively to the surface of the ground, whereby the slats may be secured in a vertical position or plumb.
42. **FABRIC-MAKING, SLAT-AND-WIRE, PORTABLE MACHINES, STRAND-TWISTERS, BEATERS.** Portable machines provided with distinct means for beating the slat to place in the shed or crotch between the strands. The beating of the slat to place by the periodic movement of the machine itself does not place it in this subclass. The beaters employed are usually auxiliary and operate in a vibratory manner.
- Search Class—
- 140—WIRE-WORKING, subclass 32, Fabric-making, Slat-and-wire, Strand-twisting, Beaters, for beaters in looms.
43. **FABRIC-MAKING, SLAT-AND-WIRE, PORTABLE MACHINES, STRAND-TWISTERS, VERTICALLY ADJUSTABLE.** Portable slat-and-wire machines having provision for adjusting the twisting devices vertically to secure a desired space relation between the strands or runners.
44. **FABRIC-MAKING, SLAT-AND-WIRE, PORTABLE MACHINES, STRAND-TWISTERS, ECCENTRIC TYPE.** Portable slat-and-wire fabric machines having twisters comprising a suitable carrier provided with guides, clamps, or holders for the strand wires, which are eccentrically mounted at one side of and revolvable upon or within a ring or substantially annular guide forming a sort of eccentric strap. The carrier holds the strand wires at one side of the strap center and revolves or turns within it, so as to move the wires in a circular path to the opposite side to cross them. This is repeated to produce the desired number of twists.
45. **FABRIC-MAKING, SLAT-AND-WIRE, PORTABLE MACHINES, STRAND-TWISTERS, WIRE-CROSSERS.** Portable slat-and-wire fabric-making machines which operate to effect a simple or single cross in the strand wires between the pickets or slats, distinguishing these machines from such as produce more than a simple cross.

CLASS 140—Continued.

Search Class—

- 140—WIRE-WORKING, subclass 50, Fabric-making, Slat-and-wire, Portable machines, Weavers, for portable devices for producing mere relative separation or displacement and crossing of the strands by horizontal movement thereof and in a few instances by vertical movement.
46. **FABRIC-MAKING, SLAT-AND-WIRE, PORTABLE MACHINES, STRAND-TWISTERS, WIRE-CROSSERS, OSCILLATORY.** Portable slat-and-wire fabric machines provided with wire-crossers having an oscillatory strand holding and crossing member, which either structurally or functionally is of the nature of a compound lever.
47. **FABRIC-MAKING, SLAT-AND-WIRE, PORTABLE MACHINES, STRAND-COILERS.** Portable slat-and-wire machines having means for coiling or wrapping one strand of the warp or runner around the other in securing the slats or for coiling a binding or continuous tie-wire around a strand.
- Search Class—
- 140—WIRE-WORKING, subclass 34, Fabric-making, Slat-and-wire, Strand-coiling, for loom machines.
48. **FABRIC-MAKING, SLAT-AND-WIRE, PORTABLE MACHINES, WEAVERS.** Portable machines for making slatted wire fabrics by weaving processes, the strands being separated and crossed usually by imparting to one or both of them horizontal movement, in some cases vertical movement.
- Search Class—
- 139—WEAVING, subclass 2, Looms, Basket; subclasses 39, Looms, Wire, for stationary machines or looms employed for ordinary weaving in the making of all-wire fabrics, and 32, Looms, Slat, cane, and straw, for looms employing other material than wire.
49. **FABRIC-MAKING, SLAT-AND-WIRE, PORTABLE MACHINES, TIE-WIRE APPLIERS.** Portable slat-and-wire machines for applying a separate tie-wire to the strand in securing each slat.
- Search Class—
- 140—WIRE-WORKING, subclass 57, Fabric-making, Implements, Slat-attaching, Tie-wire appliers, for tie-wire applying implements; and subclass 116, Joining wire, Tying-dies, for dies employed in machines for applying tie-wires.
50. **FABRIC-MAKING, SLAT-AND-WIRE, SPACERS.** Devices used in connection with fabric-making machines for placing strands or runners in desired relative position or spacing them one from another.
51. **FABRIC-MAKING, CLAMPS.** Devices for holding or clamping the strand wires, slats, or pickets in attaching the latter or while effecting repairs, splicing, twisting, etc.; also structural details of fabric machines for clamping the fabric wires while making the fabric.
- Search Classes—
- 140—WIRE-WORKING, subclass 117, Joining wire, Implements.
- 39—FENCES, subclasses 53, Stretchers, Grips, and 119, Stretchers, Grips, Sliding jaw, for clamps or grips for holding fence wires to effect stretching; and 108, Wire, Joints, for connecting fence strands together.
- 173—ELECTRICITY, CONDUCTORS, subclass 263, Connectors, Wire-splices, for clamps employed as connectors for permanently securing the ends of conductors together.
52. **FABRIC-MAKING, IMPLEMENTS.** Miscellaneous wire-working tools or devices not otherwise classifiable adapted to be held in the hand or partially supported by the work, which are employed in making or repairing fabrics.
- Search Classes—
- 140—WIRE-WORKING, subclass 117, Joining wire, Implements, or the subclasses thereunder, for tools for joining wire by twisting, coiling, etc.; and subclass 123, Implements, for wire-working implements of more general application.
- 39—FENCES, subclass 56, Fences, Stretchers, Loopers, for looping and twisting implements employed in stretching or tightening fence wires.
- 81—TOOLS, appropriate subclasses.
53. **FABRIC-MAKING, IMPLEMENTS, MAGAZINE.** Fabric-making implements having a wire supply or reel from which the cross or stay wire is drawn; also implements having magazines for the supply of clips, lock-plates, etc. Most of the fabric-making implements of magazine type are employed in supplying and successively wrapping a wire about the strands, which may be subsequently cut to form a stay.
- Search Classes—
- 140—WIRE-WORKING, subclass 15, Fabric-making, All-wire, Stay-applying, Successively wrapped stay, for looms employed in similarly wrapping stays; subclass 23, Fabric-making, All-wire, Portable machines, Stay-applying, Successively wrapped stay, for portable machines; and subclass 117, Joining wire, Implements, for implements employed for this purpose.
- 1—NAILING AND STAPLING, subclass 3, Machines, Staple-setting, Magazine.
54. **FABRIC-MAKING, IMPLEMENTS, MAGAZINE, REVOLUBLE HEAD.** Fabric-making implements of the magazine type having a rotary member or head that in operation wraps or twists the cross wire, clip, or the tie-wire around the strand.
55. **FABRIC-MAKING, IMPLEMENTS, CLIP-AFFIXING.** Fabric-making implements for securing the intersecting wires of a fabric together by applying a clip, lock-plate, tie-wire, etc., thereto or for applying the same to a single wire of a fabric for any purpose.

CLASS 140—Continued.

Search Classes—

- 140—WIRE-WORKING**, subclass 69, Barbing, Implements, for implements for applying clips or the like which have the characteristics of a barb; subclasses 11, Fabric-making, All-wire, Stay-applying, Clip-joining, and 20, Fabric-making, All-wire, Portable machines, Stay-applying, Clip-joining, for clip-affixing devices other than implements; and subclass 82, Article making or forming, Clips, for clip-making machines.
- 1—NAILING AND STAPLING**, subclass 49, Implements, Staple-setting, Magazine, for staple-applying implements. See also subclasses 2, Machines, Staple forming and setting; 4, Machines, Staple-setting; 7, Machines, Book, Staple forming and setting, and 8, Machines, Book, Staple-setting.
- 56—HARVESTERS**, subclass 82, Self-binders, Clips and prepared bands.
- 128—SURGERY**, subclass 54, Veterinary, Ring-inserters.

- 56. FABRIC-MAKING, IMPLEMENTS, SLAT-ATTACHING.** Fabric-making implements for securing slats, pickets, etc., to the strands by the usual wire-working operations, but not staplers for driving pointed structures.

- 57. FABRIC-MAKING, IMPLEMENTS, SLAT-ATTACHING, TIE-WIRE APPLIERS.** Slat-attaching implements for applying a tie-wire to a strand, so as to embrace and thereby secure the slat in place.

Search Class—

- 140—WIRE-WORKING**, subclass 49, Fabric-making, Slat-and-wire, Tie-wire appliers, for portable machines employed in applying tie-wires; subclass 117, Joining wire, Implements, particularly subclasses 119, Joining wire, Implements, Twist-ers, Revolvable head, and 122, Joining wire, Implements, Revolvable head, for implements employed in splicing wire having similar coiling or twisting elements.
- 58. BARBING.** Miscellaneous inventions in barbing wire, applying barbs, making barb-wire fences, etc., not classifiable in the minor subclasses defined below.

Search Classes—

- 140—WIRE-WORKING**, subclass 66, Barbing, Sheet-metal, for machines employed in applying sheet-metal barbs.
- 28—CORDAGE**, subclass 21, Cord and rope machines, for machines for making wire cables and in which barbs are applied by hand.
- 29—METAL-WORKING**, subclass 9, Special work, Fish-hook making, for barbing fish-hooks; also subclass 23, Special work, Toothed-cylinder making.
- 59—CHAIN, STAPLE, AND HORSESHOE MAKING**, subclass 73, Staple-making, Cutting, bending, barbing, for barbing staples.
- 80—METAL-ROLLING**, subclass 10, Screw-threads, Rods and wires, for notching and burring wire by rolling.
- 164—CUTTING AND PUNCHING SHEETS AND BARS**, subclass 7, Fence-barbs, and the subclasses thereunder, for devices for cutting barbs of sheet metal.

- 59. BARBING, BARB-WIRE FEEDING.** Machines having means for the infeeding of the barb-wire from which the barbs are formed.

Note.—This particular subclass (59) with subclasses 64, Barbing, Barb-wire feeding, Strand-crimping, and 65, Barbing, Barb-wire feeding, Rotary coilers, includes all barbing machines for forming or applying other than four-pointed barbs to strands by means of dies or oscillating formers, which shape and clamp the barb in place.

- 60. BARBING, BARB-WIRE FEEDING, MULTIPLE STRAND.** Barbing machines having means for feeding and applying the barb-wire and employing twisting devices for twisting a plurality of runner strands, usually two, into a cable, and thereby securing the barbs thereto. Means are also usually provided for coiling the barb-wire, cutting and forming barbs.

Search Class—

- 140—WIRE-WORKING**, subclasses defined below, for details of coiling, cutting, and barb-forming.

- 61. BARBING, BARB-WIRE FEEDING, FOUR-POINT BARBS.** Machines for applying four-point wire barbs by other processes than coiling or strand crimping.

Note.—In this miscellaneous subclass are all machines having dies or formers for applying four-point barbs.

Search Class—

- 140—WIRE-WORKING**, subclass 59, Barbing, Barb-wire feeding, for machines for applying other than four-point barbs.

- 62. BARBING, BARB-WIRE FEEDING, FOUR-POINT BARBS, STRAND-CRIMPING.** Machines for applying four-point barbs having means for crimping the strands or runners.

Search Class—

- 140—WIRE-WORKING**, subclasses 64, Barbing, Barb-wirefeeding, Strand-crimping, for machines for applying two-point barbs to and crimping the runners; 106, Crimping, for crimping features, and 106, Crimping, Implements, for crimping implements.

- 63. BARBING, BARB-WIRE FEEDING, FOUR-POINT BARBS, ROTARY COILERS.** Machines having rotary heads or coiling devices for applying four-point barbs.

Search Class—

- 140—WIRE-WORKING**, subclass 65, Barbing, Barb-wire feeding, Rotary coilers, for specific coiling features or elements in two-point barb machines.

- 64. BARBING, BARB-WIRE FEEDING, STRAND-CRIMPING.** Machines for applying two-point barbs having means for crimping the strands to which the barbs are secured.

CLASS 140—Continued.

Search Class—

- 140—WIRE-WORKING**, subclass 62, Barbing, Barb-wire feeding, Four-point barbs, Strand-crimping, for similar crimping features in four-point barbing machines; subclasses 105, Crimping, for crimping features, and 106, Crimping, Implements, for crimping implements.

- 65. BARBING, BARB-WIRE FEEDING, ROTARY COILERS.** Machines for making two-point barbs in which the barbs are secured to the strands by means of rotary coiling heads.

Search Class—

- 140—WIRE-WORKING**, subclass 63, Barbing, Barb-wire feeding, Four-point barbs, Rotary coilers, for similar coiling devices employed in applying four-point barbs.

- 66. BARBING, SHEET-METAL.** Applying barbs of sheet-metal to wire strands.

Search Class—

- 164—CUTTING AND PUNCHING SHEETS AND BARS**, subclass 7, Fence-barbs, and the subclasses thereunder, for machines for cutting or making the sheet-metal barbs from strips of metal.

- 67. BARBING, SEPARATE BARBS.** The making or applying of separate barbs of wire and barb-applying machines distinguished by the absence of barb-wire feeding mechanism.

- 68. BARBING, PICKETS.** Inserting barbs into or applying barbs to metal rods, pickets, palings, posts, etc.

- 69. BARBING, IMPLEMENTS.** Hand tools employed in barbing operations, usually for forming and applying barbs to wire.

- 70. BARBING, IMPLEMENTS, REVOLUBLE HEAD.** Barbing implements having a rotary member or jaw for coiling, winding, or clamping a barb upon a wire.

- 71. ARTICLE MAKING OR FORMING.** Making articles from wire stock not classifiable otherwise.

Search Classes—

- 1—NAILING AND STAPLING**, the staple and wire-nail forming and setting subclasses.
- 10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING**, subclass 43, Nail-making, Wire nails, and the subclasses thereunder;
- 29—METAL-WORKING**, subclasses under Special work;
- 59, CHAIN, STAPLE, AND HORSESHOE MAKING**, particularly subclass 71, Staple-making, and the subclasses thereunder;
- 148, ANNEALING AND TEMPERING**, subclasses 20, Annealing apparatus, Wire and springs, and 35, Hardening apparatus, Bands and wire;
- 163, NEEDLE AND PIN MAKING**, and **218, BUTTON, EYELET, AND RIVET SETTING**, subclass 8, Machines, Button, Staple-fastener, Staple making and setting, for other specific wire-article making devices.
- 28—CORDAGE**, particularly subclass 21, Cord and rope machines, for wire-rope and cord making.
- 153—METAL-BENDING**, for mere bending devices; also subclass 64.5, Coiling, Flat wire, Edge-winding, for edge-winding of flat wire.
- 175—ELECTRICITY, GENERAL APPLICATIONS**, subclass 21, Electromagnets, and **242, WINDING AND REELING**, subclass 7, Cylinder and conoid winding, and the subclasses thereunder, for the winding and making of armatures, magnets, and their coils and for winding cylinders or conoidal structures with wire.
- 242—WINDING AND REELING**, subclass 26, Bobbin and cop winding, Wire, for winding wire bobbins.

- 72. ARTICLE MAKING OR FORMING, HEDDLES.** Making wire heddles or heddle eyes for weavers' harness employed in weaving.

Note.—Making heddles and heddle frames not of metal will be found in class 139, Weaving.

Search Class—

- 29—METAL-WORKING**, subclass 170, Blanks and processes, Spinners' and weavers' irons, for making metallic heddles involving other than wire-working (bending and twisting).

- 73. ARTICLE MAKING OR FORMING, BALE-TIES.** Making wire bale-ties for baling or bundling, eyes or hooks being formed at the ends of the tie during its formation.

Search Classes—

- 140—WIRE-WORKING**, subclass 104, Eye-forming, for specific eye-forming devices; subclass 80, Article making and forming, Hooks, for specific hook-forming devices; subclass 102, Loop-forming, for specific loop-forming devices; subclass 115, Joining wire, Machines, Revolvable head, for machines for splicing or twisting the ends of bale-ties together.

- 24—BUCKLES, BUTTONS, CLASPS, ETC.**, subclass 16, Bale-ties, and the subclasses thereunder, for the article of manufacture; subclasses 27, Bale and package ties, Wire, and 29, Bale and package ties, Wire, Separate connections, Wire, for illustrated methods of making or tying.

- 81—TOOLS**, subclass 9.3, Hose-clamp appliers.

- 100—PRESSES**, subclasses 15, Baling, Articles and attachments, Bale-band tighteners, and 20, Baling, Articles and attachments, Binders, for tools for applying and tightening bale-bands.

- 74. ARTICLE MAKING OR FORMING, BOX-STRAPS.** Making wire into articles known to the trade as "box-straps" or "bundling wire," usually comprising strands having eyes or loops formed at intervals throughout the length.

Search Class—

- 140—WIRE-WORKING**, subclasses 102, Loop-forming, and 104, Eye-forming, for miscellaneous loop and eye forming devices, respectively.

CLASS 140—Continued.

75. **ARTICLE MAKING OR FORMING, BAILS.** Making wire bails for pails, boxes, etc., and for supplying handles thereto, most of which include means for forming hooks or eyes in the ends of the bail.

Search Class—

- 140—WIRE-WORKING, subclasses 102, Loop-forming, for loop-forming devices, and 104, Eye-forming devices, for eye-forming devices.

76. **ARTICLE MAKING OR FORMING, FERRULES.** Making ferrules of wire by coiling, and generally including means for soldering the convolutions into an integral structure.

Search Classes—

- 16—BUILDERS' HARDWARE, subclass 158, Ferrules, rings, and thimbles, for the article.
29—METAL-WORKING, subclass 156, Blanks and processes, Ferrules, rings, and thimbles.
113—SHEET-METAL WARE, MAKING, subclass 35, Tube-making, Spiral seaming, for the winding of metal strips or ribbon.

77. **ARTICLE MAKING OR FORMING, HAT WIRES.** Bending and shaping wire into forms suitable for use in hats and hat frames.

Search Class—

- 223—APPAREL APPARATUS, subclass 25, Hat-machines, Brim-wirers, for inserting wires in hat brims.

78. **ARTICLE MAKING OR FORMING, CONICAL SPRINGS.** Making single or double cone-shaped or tapering wire springs, such as are commonly employed in bed bottoms or springs or in upholstery, etc.

Search Classes—

- 29—METAL-WORKING, subclass 173, Blanks and processes, Springs, for methods of making springs involving more than bending or coiling.
153—METAL-BENDING, subclass 64, Coiling, and the subclasses thereunder, for devices for making cylindrical springs or springs of other than conical shape, even if specially adapted for wire.

79. **ARTICLE MAKING OR FORMING, CONICAL SPRINGS, BY ROLLS.** Machines in which rolls or wheels are employed in forming or shaping the wire into conical or tapering coils.

80. **ARTICLE MAKING OR FORMING, HOOKS.** Making wire hooks.

Search Classes—

- 1—NAILING AND STAPLING, subclass 40, Machines, Packet-looping, for devices for forming hanging loops for packaging paper, etc.
29—METAL-WORKING, subclasses 7, Eyebolt and hook making, and 9, Fish-hook making.

81. **ARTICLE MAKING OR FORMING, HOOKS, GARMENT.** Making wire garment hooks or garment hooks and eyes.

82. **ARTICLE MAKING OR FORMING, CLIPS.** Inventions for making wire clips or fasteners not otherwise classifiable. Includes devices for the making of unpainted staples or those not especially adapted to be driven.

Search Classes—

- 140—WIRE-WORKING, the search notes under subclass 71, for search data for staple making, forming, and driving devices wherein the staple made or employed is adapted to be driven.
29—METAL-WORKING, subclass 13, Special work, Paper-fastener making, for devices for making paper-fastener clips designed to perforate the paper; also subclass 5, Special work, Cotter-pin making, for clips of that type.
93—PAPER MANUFACTURES, subclasses under Tag-machines, especially subclasses 88, Pin-ticket making and attaching, and 89, Pin-ticket making, for pin-ticket making or attaching devices for applying clips to tags.
128—SURGERY, subclass 54, Veterinary, Ring-inserters, for devices, usually implements, for applying rings, clips, etc., to live stock, as hogs.
153—METAL-BENDING, for making articles by a mere bending operation.

83. **ARTICLE MAKING OR FORMING, CLIPS, CLOTHES-PINS.** Making wire clips designed for temporarily securing clothing or the like to a clothes-line.

84. **ARTICLE MAKING OR FORMING, BELT-LACINGS.** Making wire lacings for securing the ends of belts or the edges of fabrics together.

Search Classes—

- 140—WIRE-WORKING, subclass 93, Applying wire, for coiling devices for forming and applying belt fasteners or lacings comprising wire coils.
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 31, Belt-fasteners, and the subclasses thereunder, for the article.

85. **ARTICLE MAKING OR FORMING, CORK-FASTENERS.** Making wire articles adapted to be subsequently applied to bottles or stoppers for securing the latter.

Search Class—

- 140—WIRE-WORKING, subclass 94, Wire-applying, Bottles and corks, for machines for applying wire to bottles and corks for stoppering the bottle.

86. **ARTICLE MAKING OR FORMING, CORKSCREWS.** Making wire cork or stopper extractors of spiral form.

Search Classes—

- 65—KITCHEN AND TABLE ARTICLES, subclass 46, Stopper-extractors, for illustrated methods of making and for the article.
153—METAL-BENDING, subclass 78, Twisting, for auger-making by twisting.

CLASS 140—Continued.

87. **ARTICLE MAKING OR FORMING, HAIR-PINS.** Making hair-pins from wire stock by bending or twisting.

Note.—Mere coating, enameling, soldering, or like operations foreign to those characterizing wire-working are excluded from this subclass unless combined with operations or means for bending or twisting wire.

Search Class—

- 163—NEEDLE AND PIN MAKING, subclasses 6, Pin-making, and 7, Pin-making, Safety-pins, and note the lines of division set forth by definitions.

88. **ARTICLE MAKING OR FORMING, RINGS.** Making or forming wire rings, hoops, or closed loops of wire.

Search Classes—

- 140—WIRE-WORKING, subclasses 81, Article making or forming, Hooks, Garment, and 104, Eye-forming; subclass 115, Joining wire, Machines, Revolvable head, for machines for splicing the end of a wire hoop together.
1—NAILING AND STAPLING, subclass 40, Machines, Packet-looping; 29, METAL-WORKING, subclass 171, Blanks and processes, Spinners' and weavers' irons, Spinning-rings, and 59, CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 16, Chain-making, Combined machines, for specific details.
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 72, Nut and washer making, and the subclasses thereunder, particularly subclass 74, Nut and washer making, Coiling and forging.

- 29—METAL-WORKING, subclasses 7, Special work, Eyebolt and hook making; 8, Special work, Finger-ring forming and sizing, and 156, Blanks and processes, Ferrules, rings, and thimbles, for specific metal-article forming devices and processes.

- 78—METAL FORGING AND WELDING, subclass 94, Welding, Rings and tubes.

- 144—WOODWORKING, subclass 268, Wood-bending, Former, Pivotal, Coiling, for coiling wooden hoops.

- 153—METAL-BENDING, subclass 35, Curving or straightening, Stretching, for finishing, stretching, and sizing hoops, and subclass 55, Curving or straightening, Roll, Hoop, for hoop-bending by rolls.

- 219—ELECTRIC HEATING AND RHEOSTATS, subclass 5, Metal heating and heating, Welding, Rings, for ring or loop making, involving electric welding.

- 223—APPAREL APPARATUS, subclass 4, Corset-stiffeners, making, for hoop-skirt making machines.

89. **ARTICLE MAKING OR FORMING, SPRING-SETTING.** Setting coil springs or causing them to conform to predetermined length or shape, generally by compressing them to produce uniformity of product.

Search Class—

- 29—METAL-WORKING, subclass 87.1, Assembling, Spring appliers and removers.

90. **ARTICLE MAKING OR FORMING, STAYS.** Making wire stays as a separate article of manufacture, principally the stays or cross wires employed in making fabrics or fences.

Search Classes—

- 39—FENCES, subclass 74, Fences, Wire, Stays, for the manufactured fence stay.
245—WIRE FABRICS AND STRUCTURE, for fabric stays.

91. **ARTICLE MAKING OR FORMING, STAYS, GARMENT.** Making crimped or bent wire stays employed as stiffeners in garments, particularly corset stays.

Search Classes—

- 2—APPAREL, subclass 76, Body-garments, Corset-stiffeners, for the article.
223—APPAREL APPARATUS, subclass 4, Corset-stiffeners, making, for machines for making or applying types of garment-stiffeners other than bent or crimped wire.

92. **ARTICLE MAKING OR FORMING, STUD-SPIRALS.** Making spiral studs—for example, shirt-studs—comprising a tapering or conical coil of wire and terminating in an axially aligned shank or end at right angles to the plane of coiling.

Search Class—

- 140—WIRE-WORKING, subclass 78, Article making or forming, Conical springs, for coiling mechanisms.

93. **APPLYING WIRE.** Applying wire to articles—such as making and applying belt-lacings, wire couplings, clips, or joints, wiring nursery tags, making folding partition box packing, fastening springs to articles and the like—the wire being bent, coiled, or twisted in a manner characteristic of wire-working devices, but excluding wire-winding.

Search Classes—

- 1—NAILING AND STAPLING, subclass 49, Implements, Staple-setting, Magazine, for implements for applying belt-fasteners of staple construction; also subclass 40, Machines, Packet-looping.

- 56—HARVESTERS, subclasses 87, Self-binders, Twisters and tuckers; 88, Self-binders, Wire-twisters; 119, Corn-harvesters, Self-binding, and 124, Self-binders.

- 81—TOOLS, subclass 9.3, Hose-clamp appliers, for applying wire rings and clamps to hose couplings.

- 93—PAPER MANUFACTURES, subclasses under Tag-machines, for devices for applying wire to tags, usually involving feeding, cutting, twisting, or knotting devices.

- 100—PRESSES, subclasses 15, Baling, Articles and attachments, Bale-band tighteners, and 20, Baling, Articles and attachments, Binders.

- 128—SURGERY, subclass 54, Veterinary, Ring-inserters.

- 144—WOODWORKING, subclass 25, Special-work machines, Single or combined, Box-hooping.

94. **APPLYING WIRE, BOTTLES AND CORKS.** Wiring corks and bottles to provide suitable fastenings for securing the corks or stoppers to the bottles.

CLASS 140—Continued.

Search Class—

140—WIRE-WORKING, subclass 1, Combined machines, for devices including more than the operation of wiring, as corking and wiring, etc.

95. APPLYING WIRE, BOTTLES AND CORKS, ROTARY BOTTLE. Devices for wiring bottles and corks having means for rotating the bottle.

96. APPLYING WIRE, BRUSH-MAKING. Applying or inserting wires singly, in the form of a tooth or pin, in a suitable back to form a brush; but does not include devices for inserting tufts or bunches of wire bristles.

Search Class—

15—BRUSHING AND SCRUBBING, subclass 7, Brush-machines, for tuft and bunch inserting features.

97. APPLYING WIRE, CARD-CLOTHING, ATTACHING. Applying wire to a suitable back, producing what is technically known as card-clothing, employed in carding machines.

Note.—These inventions are divided into three groups: 1. The inventions included in subclass 97 for making, applying, or repairing card-clothing not included in the other two subclasses hereunder. (Subclass 97 includes details, attachments, and principally consists of devices for attaching card-clothing.) 2. Those for making card-clothing by the insertion of wire. 3. Card-clothing making devices having fillet or strip feeding means.

Search Class—

19—CARDING, subclass 2, Card-clothing, for the article and its structural features, construction of teeth, etc.

98. APPLYING WIRE, CARD-CLOTHING, ATTACHING, MAKING. Inventions for applying wire to suitable backing to produce card-clothing.

Search Class—

23—METAL-WORKING, subclass 23, Special work, Toothed-cylinder making.

99. APPLYING WIRE, CARD-CLOTHING, ATTACHING, MAKING, FILLET-FEEDING. Devices for making card-clothing having fillet or strip feeding means or details relating thereto.

100. APPLYING WIRE, COMB-MAKING. Applying or inserting a single row of teeth or combing needles in a narrow row or holder.

Search Class—

140—WIRE-WORKING, subclasses 96, Applying wire, Brush-making, and 97, Applying wire, Card-clothing, attaching.

101. KNOTTING. Inventions in what is technically known as "knotting"—i. e., securing the ends of a spiral wire spring either to itself or to another spring. The subclass, however, is intended to receive all miscellaneous patents involving wire-knotting devices not directly classifiable elsewhere.

Search Classes—

5—BEDS, subclass 21, Springs, for illustrated methods of "knotting."

56—HARVESTERS, subclasses 83, Self-binders, Cord-knotters; 125, Self-binders, Cord-knotting, and 127, Self-binders, Binders only, Cord-knotting, for machines for knotting cord or wire.

93—PAPER MANUFACTURES, subclasses under Tag-machines, for devices for applying wire to tags, usually involving feeding, cutting, twisting, or knotting devices.

100—PRESSES, subclass 20, Baling, Articles and attachments, Binders.

102. LOOP-FORMING. Inventions for forming loops in or doubling wire.

Search Class—

140—WIRE-WORKING, subclass 104, Eye-forming, when the loop is formed into an eye; and subclass 88, Article making or forming, Rings.

1—NAILING AND STAPLING, the subclasses of Staple forming and setting, and 40, Machines, Packet-looping.

23—METAL-WORKING, subclass 5, Special work, Cotter-pin making.

39—FENCES, subclass 56, Fences, Wire, Stretchers, Loopers, for looping implements employed in tightening fence strands by forming a loop therein and twisting.

56—HARVESTERS, subclasses 83, Self-binders, Cord-knotters; 125, Self-binders, Cord-knotting, and 127, Self-binders, Binders only, Cord-knotting.

59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclasses 21, Chain-making, Combined machines, Bending and eye forming; 22, Chain-making, Combined machines, Bending and welding, and 71, Staple-making.

103. LOOP-FORMING, COIL-SPRINGS. Colling the ends of wire loops or other portions thereof.

104. EYE-FORMING. Forming eyes or closed loops in wire, generally by bending or twisting.

Search Classes—

140—WIRE-WORKING, subclasses 73, Article making or forming, Bale-ties; 88, Article making or forming, Rings; 102, Loop-forming, and 114, Joining wire, Machines, Interlocking eyes, Making.

20—METAL-WORKING, subclasses 7, Special work, Eyebolt and hook making, for eyebolt and hook making devices; 9, Special work, Fish-hook making, for fish-hook making, and 20, Special work, Spectacle-frame making, for forming eyes in spectacle frames.

CLASS 140—Continued.

79—BUTTON-MAKING, subclass 2, Shank-buttons, for forming eyes in wire button shanks.

128—SURGERY, subclass 54, Veterinary, Ring-inserters.

163—NEEDLE AND PIN MAKING, subclass 7, Pin-making, Safety-pins.

105. CRIMPING. Forming crimps or kinks in wire or wire fabrics. This subclass includes all but the implements which are classified in the subclass immediately following.

Search Classes—

153—METAL-BENDING, subclasses 7, Combined operations, Curving and corrugating; 9, Beading and crimping rolls, and 63, Corrugating, and the subclasses thereunder, for devices for corrugating metal sheets and bars.

154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclasses 30, Yielding-fabric making, Corrugating and indenting, and 31, Yielding-fabric making, Corrugating and indenting, Facing feature, for devices for corrugating or crimping sheets, such as paper board and the like.

106. CRIMPING, IMPLEMENTS. Hand tools specially adapted for crimping wire.

107. FABRICS, WORKING. Wire-working operations upon wire fabrics or in finishing the same by gaging, straightening, leveling, compressing, cutting, forming, or shaping by dies, etc., and not classifiable in the minor subclasses below.

108. FABRICS, WORKING, STRETCHERS. Devices for stretching wire fabric, but not devices for stretching individual wires, nor permanent, portable, or removable fence stretchers.

Search Classes—

26—CLOTH-FINISHING, subclasses 8, Stretching, and 16, Stretching and dyeing, for cloth-stretching devices.

39—FENCES, subclasses under Fences, Stretchers, for stretching individual wires and for permanent, portable, or removable fence stretchers.

45—FURNITURE, subclass 24, Fabric-stretching frames.

112—SEWING-MACHINES, subclass 14, Quilting, for quilting-frame structures.

149—HIDES, SKINS, AND LEATHER, subclasses 20, Apparatus, Putting out and stretching, and 21, Apparatus, Putting out and stretching, Stretching-frames.

109. FABRICS, WORKING, STRETCHERS, FRAME-ATTACHING. Stretchers specially adapted for use in attaching wire fabrics to frames, such as screen, door, and window frames.

110. FABRICS, WORKING, STRETCHERS, FRAME-ATTACHING, BED-BOTTOMS. Frame-attaching devices particularly adapted for securing wire-mattress fabric to bed frames.

Search Class—

5—BEDS, subclasses under Bed-bottoms, particularly 67, Bed-bottoms, Fabric, Tighteners, and subclasses thereunder, for permanent stretchers attached to the frame.

111. JOINING WIRE. Miscellaneous devices and processes for joining or uniting wires not classifiable in the minor subclasses below.

Search Classes—

22—METAL-FOUNDING, subclass 50, Casting apparatus, Composite castings and joints, Fence and net leading, for machines or devices for joining wires by metal-founding means or casting a metal joint upon the intersection of wires, especially in fabric-making.

39—FENCES, subclass 12, Fences, Wire, Fasteners, and the subclasses thereunder, for illustrated methods of joining wires in fences.

173—ELECTRICITY, CONDUCTORS, subclass 263, Connectors, Wire-splices, for joints formed by bending or twisting.

245—WIRE FABRICS AND STRUCTURE, subclass 12, Joints.

112. JOINING WIRE, ELECTRIC WELDING. Joining wire by the process of electric welding, particularly in fabric-making.

Search Class—

219—ELECTRIC HEATING AND RHEOSTATS, subclass 4, Metal heating and working, Welding, and the subclasses thereunder, for the structure of the welding apparatus and for processes.

113. JOINING WIRE, MACHINES. Machines for tying, splicing, or otherwise securing the ends of wires together or securing one wire to another.

Search Classes—

56—HARVESTERS, subclass 124, Self-binders, and the subclasses thereunder.

100—PRESSES, subclass 20, Baling, Articles and attachments, Binders.

114. JOINING WIRE, MACHINES, INTERLOCKING EYES, MAKING. Machines for forming eyes in the ends of wires and interlocking the same in the process of forming, consisting principally of devices for making check-row wire, but not limited thereto.

115. JOINING WIRE, MACHINES, REVOLUBLE HEAD, Wire-splicing machines having a revoluble head or jaw for twisting or coiling.

Search Classes—

140—WIRE-WORKING, subclass 36, Fabric-making, Slat-and-wire, Twister-heads, for twister-heads.

118—SPINNING, subclass 14, Twisting-heads, for twisting-heads.

153—METAL-BENDING, subclass 73, Twisting.

CLASS 140—Continued.

116. JOINING WIRES, TYING-DIES. Dies employed in machines for splicing or joining wires.

Search Classes—

- 140—WIRE-WORKING, subclasses 11, Fabric-making, All-wire, Stay-applying, Clip-joining; 20, Fabric-making, All-wire, Portable machines, Stay-applying, Clip-joining, and 113, Joining wire, Machines, for the machines in which the dies are used.

117. JOINING WIRE, IMPLEMENTS. Miscellaneous hand tools for splicing or securing wires together and not classifiable in the subclasses defined below. Includes all implements for coiling or winding one wire about another.

Search Class—

- 140—WIRE-WORKING, subclass 124, Implements, Coiling, for implements employed in making a wire coil rather than in joining wires.

118. JOINING WIRE, IMPLEMENTS, TWISTERS. Implements for mutually twisting two wires together, a twist being imparted to each wire, so that they are intertwisted. Most of the implements of this subclass are employed in the manufacture of slatted wire fabrics.

Search Classes—

- 140—WIRE-WORKING, subclass 117, Joining wire, Implements, if the tool operates to coil or wind one wire about another, which remains straight.
39—FENCES, subclass 56, Fences, Wire, Stretchers, Loopers, for implements employed in looping and twisting fence strands for the purpose of taking up slack and stretching them.

119. JOINING WIRE, IMPLEMENTS, TWISTERS, REVOLUBLE HEAD. Wire-splicing implements having a rotary jaw or head for receiving the wires to be intertwisted.

Search Classes—

- 140—WIRE-WORKING, subclass 36, Fabric-making, Slat-and-wire, Twister heads, for twister-heads *per se*.
118—SPINNING, subclass 14, Twisting-heads, for twisting-heads

120. JOINING WIRE, IMPLEMENTS, TWISTERS, SPREAD-WIRE. Wire-twisting tools having means for separating the wires to be twisted or spreading them apart adjacent to the point of twisting.

121. JOINING WIRE, IMPLEMENTS, PLIER TYPE. Wire-joining tools of the plier type, particularly adapted either for coiling or twisting wires together.

Search Classes—

- 7—COMPOUND TOOLS, subclass 3, Type, Pliers, and the subclasses thereunder, for compound tools of the plier type.
81—TOOLS, subclass 43, Pliers and tongs, and the subclasses thereunder, for miscellaneous tools of plier type.

122. JOINING WIRE, IMPLEMENTS, REVOLUBLE HEAD. Implements provided with a rotary coiler or winder for splicing wires together by winding or coiling one wire about another.

123. IMPLEMENTS. Miscellaneous hand tools specially adapted for working wire not classifiable in the other subclasses of implements in this class or which include other matter not classifiable in such classes.

Search Classes—

- 7—COMPOUND TOOLS, and 81, TOOLS, for specific structural features.

124. IMPLEMENTS, COILING. Hand tools for making wire coils, but not tools for coiling one wire about another.

Search Class—

- 140—WIRE-WORKING, subclass 117, Joining wire, Implements, and the subclasses thereunder, for tools for coiling one wire about another.

125. WIRE-FEEDING. Miscellaneous wire-feeding, more particularly relating to this class, and includes all wire-feeding devices other than those of specific types defined below.

Search Classes—

- 1—NAILING AND STAPLING, particularly those subclasses involving staple forming and setting, wire inserting and cutting, wire-nail forming and driving, etc., for the usual type of wire-feeding devices or mechanisms.
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, appropriate subclasses.
29—METAL WORKING, subclass 13, Special work, Paper-fastener making, for feeding devices of analogous character.
59—CHAIN, STAPLE, AND HORSESHOE MAKING.
66—KNITTING AND NETTING, subclass 12, Feeding.
80—METAL-ROLLING, subclass 43, Feeding, and its minor subclasses.
93—PAPER MANUFACTURES, subclasses under Tag-machines, for applying wire to tags, usually involving feeding, cutting, twisting, or knotting devices.
139—WEAVING, subclass 61, Take-ups and let-offs.
147—COOPERING, subclasses 47, Basket forming and nailing, and 48, Basket-forming.
163—NEEDLE AND PIN MAKING, subclass 1, Needle-making.
205—METAL-DRAWING, subclass 20, Wire, Drawing-drums.
218—BUTTON, EYELET, AND RIVET SETTING, subclass 8, Machines, Button, Staple-fastener, Staple making and setting.

126. WIRE-FEEDING, AUTOMATIC STOP. Wire-feeding devices that in operation automatically stop the wire-feeding to prevent strain, stretching, breakage of the wire, etc., and usually operated by the wire or reel from which it is fed, upon tangling, exhaustion of supply, or other causes.

CLASS 140—Continued.

Search Classes—

- 28—CORDAGE, subclass 31, Warping stop-motions.
66—KNITTING AND NETTING, subclass 7, Stopping.
139—WEAVING, subclass 52, Stopping, and the subclasses thereunder.
242—WINDING AND REELING, the detectors and stops subclasses, for mechanisms for stopping the unwinding of the material.

127. WIRE-FEEDING, DRUM. Wire-feeding devices having a drum or wheel around which the wire passes and with or without wire clamping or tension devices, such as automatic gripping fingers or devices of like effect.

Search Class—

- 64—JOURNAL-BOXES, PULLEYS, AND SHAFTING, subclass 40, Pulleys, Grip.

128. WIRE-FEEDING, DRUM, TANGENTIAL CONTACT. Wire-feeding devices comprising one or more drums or wheels making tangential contact with the wire in feeding it. It also includes devices for producing pressure between the feeding wheels.

Search Classes—

- 29—METAL-WORKING, subclass 63, Combined machines, Stock and blank feeders, Roller.
205—METAL-DRAWING, subclass 20, Wire, Drawing-drums.

129. WIRE-FEEDING, INTERMITTENT. Feeding wire in an intermittent or interrupted manner not classifiable in the minor subclasses hereunder.

Search Classes—

- 1—NAILING AND STAPLING, subclass 11, Machines, Box, Staple forming and setting.
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING.
29—METAL-WORKING, subclasses 58, Combined machines, Stock and blank feeders, and particularly 63, Combined machines, Stock and blank feeders, Roller.

130. WIRE-FEEDING, INTERMITTENT, OSCILLATING CLAMP. Feeding devices having clamps, gripping fingers, or equivalent that oscillate or reciprocate, feeding the wire in moving in one direction and releasing it in moving in the other or that grip and release it periodically or alternately.

Search Classes—

- 1—NAILING AND STAPLING, particularly the staple-forming groups.
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, appropriate subclasses.
29—METAL-WORKING, subclass 61, Combined machines, Stock and blank feeders, Reciprocating gripper.
74—MACHINE ELEMENTS, subclass 53, Intermittent-grip devices, and the subclasses thereunder, for types of intermittent-grip devices of general application.
93—PAPER MANUFACTURES, subclasses 88, Tag-machines, Pin-ticket making and attaching, and 89, Tag-machines, Pin-ticket making.
218—BUTTON, EYELET, AND RIVET SETTING, subclass 8, Machines, Button, Staple-fastener, Staple making and setting.

131. WIRE-FEEDING, INTERMITTENT, RECESSED ROLLER. Feeding devices having a wheel or drum that operate to feed wire by tangential contact and in which a recess is formed in the periphery of the wheel, a segment or sector being removed, or other means are provided whereby a portion of the wheel or roller is periodically rotated out of contact with the wire and the feeding temporarily stopped until further rotation brings another or the same portion of the wheel into wire-feeding contact or relation.

132. WIRE-FEEDING, INTERMITTENT, SHORTLENGTHS. Feeding separate short pieces of wire as distinguished from the feeding of continuous wire.

Search Classes—

- 140—WIRE-WORKING, subclasses 4, Fabric-making, Rotary machines, and 13, Fabric-making, All-wire, Stay-applying, Short stay.
1—NAILING AND STAPLING, subclass 18, Machines, Shoe, Nail-driving, Magazine.
29—METAL-WORKING, subclass 9, Special work, Fish-hook making.
78—METAL FORGING AND WELDING, subclasses 96, Work-handling mechanism; 97, Work-handling mechanism, Wire or strip feeding; 98, Work-handling mechanism, Feeding and rotating, and 99, Work-handling mechanism, Blank-feeding.
93—PAPER MANUFACTURES, subclasses 88, Tag-machines, Pin-ticket making and attaching, and 89, Tag-machines, Pin-ticket making.

133. TENSION DEVICES. Miscellaneous devices not otherwise classifiable operating to produce tension upon wire in feeding, reeling, unwinding, etc.

Search Classes—

- 56—HARVESTERS, subclasses 86, Self-binders, Tension and take-up devices, and 88, Self-binders, Wire-twisters.
78—METAL FORGING AND WELDING, subclass 97, Work-handling mechanism, Wire or strip feeding.
112—SEWING MACHINES, subclasses 23, Shuttles and bobbins, and 39, Tensions.
117—SLK, subclasses 4, Doubling, and 7, Throwing.
118—SPINNING, subclass 13, Throstles and caps.
242—WINDING AND REELING, particularly the corresponding subclasses of Tension devices.

CLASS 140—Continued.

134. TENSION DEVICES, EQUALIZERS. Devices for maintaining uniform tension upon the strands or wires in the making of fabrics, mostly composed of eveners or equalizers for the strands of wire fences when building in the field. Each device provides for producing yielding tension and is not designed to be a permanent part of the fence.

Search Classes—

- 21—CARRIAGES AND WAGONS, subclass 76, Draft-equalizers.
39—FENCES, subclasses under Fences, Wire, Stretchers, for similar devices employed in stretching fences where the strand ends are gripped or fast and not yieldingly secured.

135. TENSION DEVICES, FRICTION-CLAMP. Devices for maintaining a yielding tension or friction upon a wire or wires by means of a clamping plate, plates, jaws, or the like.

Search Classes—

- 140—WIRE-WORKING, subclasses 137, Tension devices, Tortuous course, and 138, Tension devices, Tortuous course, Adjustable, for friction-clamps involving a tortuous course for the wire.
28—CORDAGE, subclass 20, Yarn guides and clearers.
139—WEAVING, subclass 61, Take-ups and let-offs, and the subclasses thereunder.

136. TENSION DEVICES, FRICTION-ROLLER. Tension devices having a friction-roller, drum, or reel from which the wire is unwound, and having means for preventing its free rotation either at its bearings or by means of a suitable brake of any form or type.

Search Classes—

- 140—WIRE-WORKING, subclass 134, Tension devices, Equalizers.
112—SEWING-MACHINES, subclass 23, Shuttles and bobbins.

137. TENSION DEVICES, TORTUOUS COURSE. Tension devices in which the wire is forced to pass over a devious or crooked path, the change of direction producing sufficient friction with the deflecting elements to retard its movement.

Search Classes—

- 118—SPINNING, subclass 29, Fliers.
227—FIRE-ESCAPES, subclass 28, Rope-brakes, Tortuous.

138. TENSION DEVICES, TORTUOUS COURSE, ADJUSTABLE. Tortuous-course tension devices having means for adjusting or varying the path over which the wire passes.

139. WIRE CUTTING AND STRAIGHTENING. Devices that both straighten and cut wire.

140. WIRE CUTTING AND STRAIGHTENING, PREDETERMINED LENGTHS. Wire straightening and cutting devices having means to produce straight wires of given length, the cutting mechanism usually being actuated by the wire to be cut.

141. WIRE-CUTTING. Devices particularly adapted for cutting wire not classifiable in the minor subclasses below.

Search Classes—

- 10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, appropriate subclasses.
12—BOOT AND SHOE MAKING, subclass 4, Peg-cutters.
28—METAL-WORKING, subclass 13, Special work, Paper-fastener making.
59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclasses 71, Staple-making; 73, Staple-making, Cutting, bending, barbing; 74, Staple-making, Cutting, bending, point-forming; 75, Staple-making, Cutting and bending, and 76, Staple-making, Cutting and bending, Rotary former.
80—METAL-ROLLING, subclass 3, Cutting and rolling.
93—PAPER MANUFACTURES, subclasses of Tag-machines, for devices for applying wire to tags, usually involving feeding, cutting, twisting, or knotting devices.

CLASS 140—Continued.

- 163—NEEDLE AND PIN MAKING, subclass 1, Needle-making.

- 164—CUTTING AND PUNCHING SHEETS AND BARS, analogous subclasses, for devices operating upon sheets and bars.

- 218—BUTTON, EYELET, AND RIVET SETTING, subclass 8, Machines, Button, Staple-fastener, Staple making and setting.

142. WIRE-CUTTING, DIES. Miscellaneous cutting devices in the form of dies that shape or bend the wire cut thereby.

143. WIRE-CUTTING, OSCILLATING APERTURED CUTTER. Wire-cutting devices in which a plate or block is provided with an aperture, notch, or recess in which the wire lies and is cut by relative movement between the same and the wire.

Search Class—

- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 40, Cutting, Machines, Oscillating apertured cutter, for sheet and bar cutters.

144. WIRE-CUTTING, PIVOTED CUTTER. Wire-cutting devices provided with a knife or cutter having an oscillatory motion or other than reciprocating or rotary.

Search Class—

- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 14, Combined machines, Pivoted knife-carrier, and 15, Combined machines, Reciprocating knife-carrier.

145. WIRE-CUTTING, RECIPROCATING CUTTER. Cutters moving in straight lines back and forth and specially adapted to cut wire.

Search Classes—

- 1—NAILING AND STAPLING, subclass 18, Machines, Shoe, Nail-driving, Magazine.
93—PAPER MANUFACTURES, subclasses 88, Tag-machines, Pin-ticket making and attaching, and 89, Tag-machines, Pin-ticket making.

146. WIRE-CUTTING, ROTARY CUTTER. Special wire-cutting devices having a revoluble rather than an oscillating cutter.

147. WIRE-STRAIGHTENING. Devices specially adapted for straightening wire, except those employing rolls or rollers, which are classifiable in the minor subclass below.

Search Classes—

- 148—ANNEALING AND TEMPERING, subclass 20, Annealing apparatus, Wire and springs.
153—METAL-BENDING, subclasses 35, Curving or straightening, Stretching, for spring-straightening; subclass 37, Curving or straightening, Flier-frame, mostly comprising patents for straightening wire by means of a revolving flier.

148. WIRE-STRAIGHTENING, ROLLS. Wire-straightening devices employing rolls or rollers that rotate with the movement of the wire.

149. WIRE-TWISTING. Miscellaneous wire-twisting devices not classifiable in other subclasses of this or other arts under appropriate titles.

Search Classes—

- 140—WIRE-WORKING, particular groups under Article making or forming.
28—CORDAGE, subclasses 2, Banding, and 21, Cord and rope machines.
56—HARVESTERS, subclasses 87, Self-binders, Twisters and tuckers, and 88, Self-binders, Wire-twisters.
93—PAPER MANUFACTURES, subclasses of Tag-machines, for devices for applying wire to tags, usually involving feeding, cutting, twisting, or knotting devices.
153—METAL-BENDING, subclass 78, Twisting.

CLASS 142.—WOOD-TURNING.

DEFINITIONS.

Class.

Wood-turning includes inventions for reducing sticks of wood to a desired form by means of rotary or non-rotary cutters brought into engagement with the circumference of the continuously-rotating stick or by means of rotary or non-rotary cutters revolving circumferentially around and in engagement with the stick or that portion of the stick to be reduced.

Wood-turning also includes machines provided with work-holders which hold several sticks arranged axially in or near the circumference thereof to form a cylinder of such sticks to be operated upon by the cutter as though it were a single stick. These machines are for producing sticks of polygonal section by turning the sticks in the work-holder to successively present new surfaces to the cutter.

In this class of machines rotating saw-cutters which engage with the sticks while secured in the lathe-chuck or between the centers are regarded as a species of rotary cutters and are not classified with saws in class 143, WOOD-SAWING.

Wood-turning does not include machines comprising a relatively-rotating cutter and table or support upon which blocks or segmental strips of wood are so secured that they may be brought into engagement with the cutter which stands transversely to the sticks and feeds longitudinally thereof. Such machines may be found in the several subclasses of class 144, WOODWORKING, Shaping.

Search Class—
82—TURNING.

Subclasses.

1. MISCELLANEOUS. Wood-turning machines which comprise features of construction not elsewhere specifically classified.

Search Class—

144—WOODWORKING, subclasses 48, Combined machines, Turning and sawing, and 47, Combined machines, Turning and polishing.

2. POLYGONAL-SECTION, ANNULAR WORK-HOLDERS. Machines comprising a cutter and work-holders adapted to secure several sticks together in the form of a hollow cylinder to be rotated in contact with the cutter. After the cylinder has been reduced by the cutter the sticks are turned upon their axes in the work-holder and the cylinder again submitted to the action of the cutter. This operation is continued until as many sides have been produced upon the sticks as desired.

Search Class—

144—WOODWORKING, subclass 138, Shaping, Pattern, Polygonal forms, indexed work.

3. PATTERN-SECTION, MANY-SPINDLE LATHES. Machines for reducing sticks to other than a circular cross-section, comprising a plurality of turning spindles whereby several sticks are simultaneously under different stages of completion. The stock may be supplied to the spindles successively or simultaneously.

4. CIRCULAR-SECTION, MANY-SPINDLE LATHES. Machines comprising a plurality of turning spindles whereby several sticks are simultaneously under different stages of completion. The stock may be supplied to the spindles successively or simultaneously.

5. CIRCULAR-SECTION, MANY-SPINDLE LATHES, AUTOMATIC SPINDLE-FEED. Many-spindle lathes which comprise mechanism for separating the pairs of spindles to facilitate the removal of finished sticks and the supply of new stock and mechanism for causing the spindles of each pair to approach each other to engage the new stock.

6. PATTERN-SECTION, CAM-CONTROLLED, CUTTER, Laterally and Longitudinally Movable. Machines for reducing a stick to other than a circular cross-section, wherein the cutter is given a simultaneous longitudinal and transverse movement relative to the axis of the stick, the transverse movement of the cutter being controlled by a rotary cam.

7. PATTERN-SECTION, COPYING, CUTTER, Laterally and Longitudinally Movable. Machines for reducing a stick to other than a circular cross-section, wherein the cutter is made to advance toward or recede from the axis of the stick by means of a rotating pattern-guide. Simultaneously with its transverse movements the cutter is given a movement lengthwise of the stick.

Search Class—

142—WOOD-TURNING, subclass 3, Pattern section, Many-spindle lathes.

8. PATTERN-SECTION, CLAMPED-WORK, CUTTER, CHISEL, Laterally and Longitudinally Movable. Machines for reducing a stick to other than a circular cross-section by means of a chisel-cutter which is caused to move longitudinally and around the clamped stick and is controlled in its movement toward or from the axis of the stick by a pattern-guide.

CLASS 142—Continued.

9. PATTERN-SECTION, CUTTER, ROTARY. Machines for reducing a stick to other than a circular cross-section by means of rotary cutters having their bearings carried in movable supports, the supports being controlled in their movements by mechanism other than a cam or pattern-guide.

10. PATTERN-SECTION, CAM-CONTROLLED, CUTTER, ROTARY, FIXED BEARINGS. Machines for reducing a stick to other than a circular cross-section, wherein a pattern-cutter rotates in fixed bearings and the rotating stick is caused to approach or recede from the cutter by means of a cam carried by the spindle.

Search Class—

142—WOOD-TURNING, subclass 3, Pattern-section, Many-spindle lathes.

11. PATTERN-SECTION, COPYING, CUTTER, ROTARY, FIXED BEARINGS. Machines for reducing a stick to other than a circular cross-section, wherein the rotary cutter is mounted in fixed bearings and the stick is caused to move endwise and at the same time transversely of its axis toward and from the cutter by means of a rotating pattern-guide.

12. PATTERN-SECTION, CAM-CONTROLLED, CUTTER, Laterally-Movable. Machines for reducing a stick to other than a circular cross-section, wherein the cutter moves transversely to the axis of the rotating stick and is guided toward and from such axis by a rotary cam. While being operated upon by the cutter the stick moves longitudinally.

13. PATTERN-SECTION, COPYING, CUTTER, Laterally-Movable. Machines for reducing a stick to other than a circular cross-section, wherein the cutter is made to advance toward or recede from the axis of the stick by means of a rotating pattern-guide and the stick is carried endwise past the cutter.

14. PATTERN-SECTION, CAM-CONTROLLED, CUTTER, Longitudinally-Movable. Machines for reducing a stick to other than a circular cross-section, wherein the cutter moves longitudinally of the stick and the stick is given a simultaneous transverse movement by means of a rotary cam.

15. PATTERN-SECTION, COPYING, CUTTER, Longitudinally-Movable. Machines for reducing a stick to other than a circular cross-section, wherein the cutter moves longitudinally along the stick and the axis of the stick is caused to approach or recede from the cutter by means of a rotating pattern-guide.

16. PATTERN-SECTION, OVAL-FORM, GUIDED CHUCKS. Mechanisms for guiding work-holding chucks in elliptical or oval paths.

17. CIRCULAR-SECTION, AUTOMATIC SPINDLE-LATHES, Turning-lathes which comprise mechanism for periodically separating and drawing together the spindles, whereby they release the finished material and engage the new stock to be turned.

18. CIRCULAR-SECTION, AUTOMATIC SPINDLE-LATHES, ENDLESS-FEED. Automatic spindle-lathes in which the stock is fed to the spindles by an endless conveyer.

Search Class—

142—WOOD-TURNING, subclass 5, Circular-section, Many-spindle lathes, Automatic spindle-feed.

19. CIRCULAR-SECTION, AUTOMATIC SPINDLE-LATHES, ENDLESS-FEED, DISK. Automatic spindle-lathes in which the stock is fed to the spindles by a rotating disk having conveying notches or pockets in its periphery.

20. CIRCULAR-SECTION, AUTOMATIC SPINDLE-LATHES, CHUTE-FEED. Automatic spindle-lathes in which the stock is fed to the spindles through a chute or over a table or platform.

Search Classes—

142—WOOD-TURNING, subclass 4, Circular-section, Many-spindle lathes, Automatic spindle-feed.

144—WOODWORKING, subclass 245, Feed and Presser Mechanisms, Blank feeders.

21. CIRCULAR-SECTION, CUTTERS, CHISELS, PLAIN AND PATTERN, PATTERN-GUIDE. Wood-turning machines for reducing a stick to a circular section by means of two chisel-cutters, one of which rough-cuts the stick to approximate its finished shape and comprises a plain cutter guided toward and from the axis of the stick by a pattern. The other is a pattern-cutter which makes a thin smoothing or finishing cut.

22. CIRCULAR-SECTION, CUTTERS, ROTARY AND CHISEL, PATTERN. Wood-turning machines for reducing a stick to a circular section by means of two cutters having pattern-cutting edges, one of which cutters is rotary and the other is a chisel. The rotary cutter rough-cuts the stick to approximate its finished form and the chisel makes a thin finishing cut.

CLASS 142—Continued.

23. CIRCULAR-SECTION, SPIRAL-GROOVING, HOLLOW CUTTER-HEAD. Machines for reducing a stick to a circular section having a spiral groove in its circumference by passing the stock axially through a rotary hollow cutter-head having a chisel-cutter projecting through its circumference toward the axis of the stick.
24. CIRCULAR-SECTION, SPIRAL-GROOVING, CUTTER, ROTARY, PATTERN-GUIDE. Machines for reducing a stick to a circular section and producing a spiral groove in its circumference by means of a rotary cutter which is guided to move toward and from the axis of the stick by a relatively-moving pattern.
25. CIRCULAR-SECTION, SPIRAL-GROOVING, CUTTER, ROTARY, HOLLOW-MANDREL. Machines for reducing a stick to a circular section and producing a spiral groove in its circumference by means of a rotary cutter. The stick is controlled in its movements by a rotating hollow mandrel.
26. CIRCULAR-SECTION, SPIRAL-GROOVING, CUTTER, ROTARY. Machines for reducing a stick to a circular section and producing a spiral groove in its circumference by means of a rotary cutter.
27. CIRCULAR-SECTION, HOLLOW CUTTER-HEAD, CUTTER, CHISEL, RADially-MOVABLE, PATTERN-GUIDE. Machines for reducing a stick to a circular section by a hollow cutter-head, in which the chisel-cutter is made to reciprocate through the side of the cylinder of the cutter-head and is guided to approach or recede from the axis of the stick by a pattern.
28. CIRCULAR-SECTION, HOLLOW CUTTER-HEAD, CUTTER, CHISEL, RADially-MOVABLE, PATTERN-GUIDE, ROTARY. Machines for reducing a stick to a circular section by a hollow cutter-head, in which the chisel-cutter is made to reciprocate through the side of the cylinder of the cutter-head and is guided to approach or recede from the axis of the stick by a rotary pattern.
29. CIRCULAR-SECTION, HOLLOW CUTTER-HEAD, CUTTER, CHISEL, RADially-MOVABLE. Machines for reducing a stick to a circular section by a hollow cutter-head, in which the chisel-cutter is made to reciprocate through the side of the cylinder and is provided with a plain edge.
30. CIRCULAR-SECTION, HOLLOW CUTTER-HEAD, CUTTER, CHISEL, PATTERN, RADially-MOVABLE. Machines for reducing a stick to a circular section by a hollow cutter-head, in which the chisel-cutter is made to reciprocate through the side of the cylinder and is provided with a pattern edge.
31. CIRCULAR-SECTION, HOLLOW CUTTER-HEAD, CUTTER, CHISEL. Machines for reducing a stick to a circular section by a hollow cutter-head, in which the chisel-cutter projects through the cylinder toward its axis.
32. CIRCULAR-SECTION, HOLLOW CUTTER-HEAD. Machines for reducing a stick to a circular section by means of a rotating cylinder having a chisel cutting edge at one end. The stick to be reduced is forced against the cutting edge of the cylinder, and the reduced portion passes through the cylinder and out at the end opposite the cutter.
- Search Class—**
144—WOODWORKING, subclass 23, Special-work machines, Single or combined, Disk-cutting, rotary tubular cutter.
33. CIRCULAR-SECTION, SPIRAL-GROOVING, CUTTER, ROTARY, RACK-AND-PINION FEED. Machines for reducing a stick to a circular section and producing a spiral groove in its circumference by means of a rotary cutter. The relative movements of the stick and the cutter are controlled by a rack and pinion.
34. CIRCULAR-SECTION, SPIRAL-GROOVING, CUTTER, ROTARY, ROLLER-FEED. Machines for reducing a stick to a circular section and producing a spiral groove in its circumference by means of a rotary cutter. The movements of the stick past the cutter are controlled by positively-driven feed-rollers.
35. CIRCULAR-SECTION, SPIRAL-GROOVING, CUTTER, CHISEL. Machines for reducing a stick to a circular section and producing a spiral groove in its circumference by means of a chisel-cutter.
36. CIRCULAR-SECTION, CUTTER, SLICING, LONGITUDINALLY-MOVABLE. Wood-turning machines for reducing a block of cork or other soft wood to a circular section by rotating it in contact with a longitudinally-moving cutter-blade which reduces the block with a slicing action.
- Search Class—**
142—WOOD-TURNING, subclass 40, Circular-section, Cutter, Rotary.
37. CIRCULAR-SECTION, CUTTER, ROTARY, PATTERN-GUIDE. Wood-turning machines which reduce a stick to a circular section by rotating the stick on its axis and in contact with a rotary cutter which is guided toward and from the axis of the stick by a relatively-moving pattern.

CLASS 142—Continued.

38. CIRCULAR-SECTION, CUTTER, CHISEL, PATTERN-GUIDE. Wood-turning machines which reduce a stick to a circular section by means of a narrow plain chisel-cutter guided toward and from the axis of the stick by means of a relatively-moving pattern.
39. CIRCULAR-SECTION, CUTTER, CHISEL, PATTERN-GUIDE, ROTARY. Wood-turning machines which reduce a stick to a circular section by means of a narrow plain chisel-cutter guided toward and from the axis of the stick by means of a rotating pattern.
40. CIRCULAR-SECTION, CUTTER, ROTARY. Wood-turning machines which reduce a stick to a circular section by rotating the stick on its axis and in contact with a rotary cutter.
- Search Classes—**
142—WOOD-TURNING, subclasses 20, Circular-section, Automatic spindle-lathes, Chute-feed; 5, Circular-section, Many-spindle lathes, Automatic spindle-feed, and the several subclasses of Pattern-section
120—STATIONERY, subclasses under 85 et seq., Pencil-sharpeners.
144—WOODWORKING, subclasses 209, Veneer-lathes; 30, Special work-machines, single or combined, Pin-pointing.
41. CIRCULAR-SECTION, CUTTER, ROTARY, PATTERN. Wood-turning machines which reduce a stick to a circular section by rotating the stick on its axis and in contact with a broad-faced rotary cutter having other than a plain cutting edge.
- Search Class—**
142—WOOD-TURNING, subclasses 34, Circular-section, Spiral-grooving, Cutter, Rotary, Roller-feed; 33, Circular-section, Spiral-grooving, Cutter, Rotary, Rack-and-pinion feed; 5, Circular-section, Many-spindle lathes, Automatic spindle-feed; 4, Circular-section, Many-spindle lathes; and 52, Polygonal-section, Annular work-holders.
42. CIRCULAR-SECTION, CUTTER, CHISEL. Wood-turning machines which reduce a stick to a circular section by rotating it in contact with a plain chisel carried by an adjustable tool-rest, whereby the chisel may be directed by hand to properly shape the stick.
- Search Class—**
146—VEGETABLE CUTTERS AND CRUSHERS, subclass 8, Apple Parers.
43. CIRCULAR-SECTION, CUTTER, CHISEL, PATTERN. Wood-turning machines which reduce a stick to a circular section by rotating it in contact with a chisel having other than a plain cutting edge. The cutter may be of sufficient width to cut the entire length of the stick or may be narrow and make successive cuts along the stick.
- Search Class—**
142—WOOD-TURNING, subclasses 20, Circular-section, Automatic spindle-lathes, Chute-feed; 5, Circular-section, Many-spindle lathes, Automatic spindle-feed; and 4, Circular-section, Many spindle lathes.
44. CIRCULAR-SECTION, CUTTER, CHISEL, PATTERN, DISK. Wood-turning machines which reduce a stick to a circular section by rotating it in contact with a disk provided with a chisel edge having a pattern outline. As the cutter is moved longitudinally along the stick the disk is rotated to present the entire contour of the cutter to the stick.
45. CIRCULAR-SECTION, CLAMPED-WORK, HOLLOW CUTTER-HEAD, END-TURNING. Machines for reducing the ends of sticks while clamped to prevent rotation thereof by means of a hollow cutter-carrying head having a cutter projecting within the shell thereof.
- Search Classes—**
142—WOOD-TURNING, subclasses under 27, Circular-section, Hollow cutter-head.
145—WOOD-WORKING TOOLS, subclass 115, Tenon-cutters.
46. CIRCULAR-SECTION, CLAMPED-WORK, CUTTER, CHISEL, LONGITUDINALLY-MOVABLE. Machines for reducing the ends of sticks to a circular section by means of a cutter carried in a frame which revolves around the axis of the clamped stick and comprises mechanism for moving the cutter longitudinally in the frame.
47. CARRIAGE-FEED. Mechanism for controlling the movements of the carriage or tool-rest.
- Search Class—**
142—WOOD-TURNING, subclasses 46, Circular-section, Clamped-work, Cutter, Chisel, Longitudinally-movable; 26, Circular-section, Spiral-grooving, Cutter, Rotary; 24, Circular-section, Spiral-grooving, Cutter, Rotary, Pattern-guide; 21, Circular-section, Cutters, Chisel, plain and pattern, Pattern-guide, and the several subclasses of Pattern-section.
48. TOOL-RESTS AND WORK-SUPPORTS. Tool-rests provided with an extension adapted to support the turned portion of the stick near the cutter and prevent it from springing therefrom.
- Search Class—**
142—WOOD-TURNING, subclasses 43, Circular-section, Cutter, Chisel, Pattern; 44, Circular-section, Cutter, Chisel, Pattern, Disk; 37, Circular-section, Cutter, Chisel, Pattern-guide; and 21, Circular-section, Cutters, Chisels, plain and pattern, Pattern-guide.

CLASS 142—Continued.

- 49. **TOOL-RESTS.** Supports within which wood-turning cutter-tools are adjusted and secured.
- 50. **STEADY-RESTS, YIELDING.** Yielding rests or supports for sticks having irregular cross-section. These supports are for preventing the stick from springing away from the cutter.
- 51. **PATTERN-SECTION, OVAL-FORM, GUIDED CHUCKS, COUNTER-POISES.** Oval or elliptically-guided work-holder chucks provided with weights or counter-poise to balance the reciprocating parts of the chuck.
- 52. **POLYGONAL-SECTION, ANNULAR WORK-HOLDER, CHUCKS.** Chucks for holding sticks together in the form of a hollow cylinder.
- 53. **LATHE-CENTERS.** Center spindles provided with one or more spurs for engaging the end of a stick of wood or other soft material to be turned.

CLASS 142—Continued.

- 54. **HOLLOW MANDRELS.** Longitudinally-perforated rotary spindles or work-carriers through which the sticks feed end-wise.
- Search Class—**
142—WOOD-TURNING, subclasses 23, Circular-section, Spiral-grooving, Hollow cutter-head; 32, Circular-section, Hollow cutter-head, and subclasses thereof.
- 55. **ATTACHMENTS.** Devices to be attached or secured to wood-turning machines to be used therewith or wood-turning machines designed to be attached to the frames of machines which comprise cylinders for the purpose of resurfacing the cylinders.
- 56. **TURNING-TOOLS.** Cutting-tools peculiarly adapted for use in connection with wood-turning machines.
- 57. **WORK-HOLDERS, SOCKET.** Socket-chucks for securing a stick to the live-spindle of a wood-turning machine.

CLASS 143.—WOOD-SAWING.**DEFINITIONS.***Class.*

This class includes machines, parts and attachments therefor, in which the sole function is severing wood by means of saws; also, saw-blades, whether for machines or handsaws. Machines in which sawing is not the sole function, as well as those in which saws are used for dovetailing, gaining, or any other purpose than severing wood, are classified in class 144, WOODWORKING. Handsaws in which the cutting part of the saw does not constitute the invention are classified in class 145, WOODWORKING-TOOLS.

Search Class—

29—METAL WORKING, subclass 67, Sawing, et seq.

Subclasses.

1. COMBINATION-MACHINES. Machines embodying in each two or more of the recognized types of sawing-machines.
2. HOOP-POLE MACHINES. Machines for sawing hoops from small poles.
3. HOOP-POLE MACHINES, BAND-SAW. Hoop-pole machines in which a band-saw is used.
4. RESAWING-MACHINES. Sawing-machines designed for cutting sawed lumber into thinner pieces.
Note.—Quarter-sawing machines are not included in this class, but with the various structural classes of sawing-machines.
5. RESAWING-MACHINES, BAND-SAW. Resawing-machines using a band-saw.
6. MITERING-MACHINES. Sawing-machines designed especially for cutting bevels or miters.
7. MITERING-MACHINES, RECIPROCATING-SAW. Miter-sawing machines having a reciprocating saw.
8. SHINGLE-MACHINES. Machines especially designed for sawing shingles and not adapted for general use.
9. SHINGLE-MACHINES, RECIPROCATING-SAW. A series of saws mounted in a reciprocating frame adapted especially for cutting out shingles.
10. SHINGLE-MACHINES, BELT-FEED. Shingle-sawing machines having an endless chain or belt for carrying the blocks.
11. SHINGLE-MACHINES, DOG-AND-STEP FEED. The blocks are set for each cut by dog-and-step mechanism, which alternately advances either end of the block, so that pieces thicker at one end than the other may be sawed.
12. SHINGLE - MACHINES, ROLLER - FEED. The shingle-blocks are set for each cut by rolls so driven that each end of the block is alternately advanced.
13. SHINGLE - MACHINES, TILTING - GAGE. The shingle-blocks are forced against a vertically-pivoted tilting-gage plate which determines the thickness of the shingle.

Search Class—

144—WOODWORKING, subclass 170, Slicers, Beveling, Tilting-gage.

14. SHINGLE-MACHINES, TILTING-TABLE. After each cut the shingle-blocks are allowed to drop upon a horizontally-pivoted tilting table to determine the thickness of the shingle.

Search Class—

144—WOODWORKING, subclass 171, Slicers, Beveling, Tilting-table.

15. SHINGLE - MACHINES, TILTING - TABLE, ROTARY-CARRIAGE. Tilting-table machines in which the block-holders are supported upon a rotating carriage.
16. ARC-SAW MACHINES. Machines having one or more saws bent into arcs and designed to oscillate in the line of curvature of the saw.

Search Class—

144—WOODWORKING, subclass 33, Special work machines, single or combined, Tray-making.

17. BAND-SAW MACHINES. Sawing-machines of general utility in which the saws are endless bands traveling over a plurality of pulleys.
18. BAND-SAW MACHINES, CENTERED-LOG. The log is centered between chucks and rotated on an axis parallel to the line of travel of the saw.

Search Classes—

143—WOOD-SAWING, subclass 39, Circular-saw machines, Angular, Centered-log; 144, WOODWORKING, subclass 165, Slicers, Strip-cutting, Converging knives, Lathe feed; 166, Slicers, Strip-cutting, Lathe feed.

CLASS 143—Continued.

19. BAND-SAW MACHINES, HORIZONTAL-SAW. The saw travels in a horizontal plane, though the kerf may be either vertical or horizontal.
20. BAND SAW MACHINES, INCLINED. The line of travel of the saw is oblique to the line of travel of the work.
21. BAND-SAW MACHINES, MULTIPLE IDLERS. The saw is supported on two or more idler-pulleys.
22. BAND - SAW MACHINES, MULTIPLE - SAW. Machines having two or more band-saws which operate simultaneously.
23. BAND-SAW MACHINES, RETARDED-IDLER. Devices to retard the idler-pulley of a band-saw machine when sudden strain is put upon the saw, and so taking up the slack caused by the strain.
24. BAND-SAW MACHINES, TILTING-FRAME. The frame supporting the saw-pulleys is designed to be tilted into various positions in order to vary the angle of the cut.
25. BAND-SAW MACHINES, RECIPROCATING-CARRIAGE. Band-saw machines in which the work is presented to the saw by a reciprocating carriage.
26. BAND-SAW MACHINES, SPECIAL-FEED. Band-saw machines characterized by various forms of work-feeding mechanism.
27. BAND-SAW MACHINES, AUTOMATIC TENSION-REGULATORS. Devices for automatically taking up slack in band-saws and so keeping the tension of the saws uniform.
28. BAND-SAW MACHINES, CATCHERS. Devices for catching band-saws when they run off the pulleys or for keeping them in position on the pulleys.
29. BAND-SAW MACHINES, PULLEY CLEANERS AND LUBRICATORS. Scraping, washing, and oiling devices for the pulleys of band-saw machines.
30. BAND-SAW MACHINES, PULLEYS. Pulleys having features of construction which especially adapt them to use upon band-saw machines.

Search Class—

64—JOURNAL BOXES, PULLEYS, AND SHAFTING, subclass 17, Pulleys.

31. BAND-SAW MACHINES, SAW-LEAD ADJUSTMENTS. Devices for inclining the pulleys or for adjusting the saw on the pulleys in order to prevent the pressure of the work from forcing the saw off the pulley.
32. CHAIN-SAW MACHINES. Sawing-machines using chain-saws.
33. CIRCULAR-SAW MACHINES. Sawing-machines having none but circular saws.
34. CIRCULAR-SAW MACHINES, PILE-CUTTING. Circular saw machines for cutting off the tops of piles after they have been driven.
35. CIRCULAR-SAW MACHINES, ADJUSTABLE-SAW. Circular-saw machines having adjustable saws.
36. CIRCULAR-SAW MACHINES, ADJUSTABLE-SAW, ANGULAR. Circular-saw machines whose saws are angularly adjustable.
37. CIRCULAR-SAW MACHINES, ADJUSTABLE-SAW, LATERAL. Circular-saw machines having the saws so mounted in the machine that they may be shifted laterally by appropriate means.
38. CIRCULAR-SAW MACHINES, ANGULAR. Circular-saw machines employing two or more saws set at angles to each other and operating simultaneously upon the same material.

Search Class—

144—WOODWORKING, subclasses 89, Dovetailing, Inclined rotary-disk; 203, Tenoning, Rotary gaining-cutters; 204, Tenoning, Rotary gaining-cutters, Multiple-tenon.

39. CIRCULAR-SAW MACHINES, ANGULAR, CENTERED-LOG. Angular circular-saw machines in which the log is supported between centers and is rotated slightly after each cut.

Search Classes—

143—WOOD-SAWING, subclass 18, Band-saw machines, Centered-log.

144—WOODWORKING, subclasses 165, Slicers, Strip-cutting, Converging knives, Lathe-feed; 166, Slicers, Strip-cutting, Lathe-feed.

164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 60, Cutting, Machines, Rotary cutter.

CLASS 143—Continued.

40. CIRCULAR-SAW MACHINES, AUXILIARY-SAW. Machines having two circular saws, one set above the other, and designed for sawing material of thickness too great to be readily cut through by a single saw.
41. CIRCULAR-SAW MACHINES, DROP-SAW. Machines having saws, usually several, separately mounted in pivoted frames which permit the saw to be dropped below the table when not in use. In some machines the saws are above the table and have to be lowered into operative position.
42. CIRCULAR-SAW MACHINES, KNIFE-DISK. The ordinary circular saw is replaced by a disk knife which is caused to rotate at a high rate of speed.
Search Class—
164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 60, Cutting, Machines, Rotary cutter.
43. CIRCULAR-SAW MACHINES, PORTABLE. Machines designed for easy transportation either dismantled or set up.
44. CIRCULAR-SAW MACHINES, RIM-DRIVEN. The saw is driven by means of power applied directly to the saw near the periphery instead of to the shaft. Most of the saws are annular in form and supported upon a plurality of rollers.
45. CIRCULAR-SAW MACHINES, SUCCESSIVE. Two or more saws mounted in a pivoted frame which permits only a single saw to be brought into operative position at once.
46. CIRCULAR-SAW MACHINES, SWINGING-SAW. The saw is mounted in a swinging frame and is swung into operative position.
47. CIRCULAR-SAW MACHINES, TRAVELING-SAW. The work remains stationary and the saw travels forward while making its cut.
Search Class—
143—WOOD-SAWING, subclass 34, Circular-saw machines, Pile-cutting.
48. CIRCULAR-SAW MACHINES, SPECIAL-FEED. Circular-saw machines characterized by special forms of feed mechanism different from those in other subclasses.
49. CIRCULAR-SAW MACHINES, CHAIN-FEED. The material to be sawed is conveyed to the saw by an endless chain or belt.
Search Classes—
143—WOOD-SAWING, subclass 41, Circular-saw machines, Drop-saw; 144—WOODWORKING, subclass 242, Feed and presser mechanisms, Miscellaneous.
50. CIRCULAR-SAW MACHINES, LATHE-FEED. The log is centered between two blocks and turned slightly after each cut. There is but one saw.
51. CIRCULAR-SAW MACHINES, PUSHER-FEED. The work is pushed across the supporting frame or table into engagement with the saw.
Search Class—
144—WOODWORKING, subclass 242, Feed and presser mechanisms, Miscellaneous.
52. CIRCULAR-SAW MACHINES, RECIPROCATING-CARRIAGE. The work is supported upon a carriage which is reciprocated by the operator.
53. CIRCULAR-SAW MACHINES, RECIPROCATING-CARRIAGE, AUTOMATIC-FEED. The position of the work on the carriage is automatically shifted at each reciprocation thereof in order to set the work for another cut.
54. CIRCULAR-SAW MACHINES, RECIPROCATING-CARRIAGE, MECHANICALLY-OPERATED. The carriage is reciprocated by mechanism which may have to be set in motion independently of the saw-driving mechanism or which may be operatively connected therewith and act automatically.
55. CIRCULAR-SAW MACHINES, ROLLER-FEED. Circular-saw machines in which the work is fed to the saw by means of positively-driven rolls; also, feed-rolls especially designed for sawing-machines.
Search Classes—
143—WOOD-SAWING, subclass 84, Reciprocating-saw machines, Roller-feed; 144, WOODWORKING, subclasses 117, Planers, Rotary-cutter, Cylinder; 246, Feed and presser mechanisms, Rolls, Feed, Miscellaneous; 247, Feed and presser mechanisms, Rolls, Feed, Spring-pressed; 248, Feed and presser mechanisms, Rolls, Feed, Weighted.
56. CIRCULAR-SAW MACHINES, ROLLER-FEED, GANG. Roller-feed circular-saw machines having a number of saws mounted upon one shaft.
Search Classes—
143—WOOD-SAWING, subclass 84, Reciprocating-saw machines, Roller-feed; 144, WOODWORKING, subclasses 117, Planers, Rotary-cutter, Cylinder; 246, Feed and presser mechanisms, Rolls, Feed, Miscellaneous; 247, Feed and presser mechanisms, Rolls, Feed, Spring-pressed; 248, Feed and presser mechanisms, Rolls, Feed, Weighted.
57. CIRCULAR-SAW MACHINES, ROTARY-CARRIAGE. A rotary carriage, which usually has several work-holders, presents the work to the saw.

CLASS 143—Continued.

58. CIRCULAR-SAW MACHINES, SWINGING-CARRIAGE. The work is brought into contact with the saw by means of a swinging carriage.
Search Class—
143—WOOD-SAWING, subclass 77, Reciprocating-saw machines, Special-cut, Pivoted work-holder.
59. CIRCULAR-SAW MACHINES, TILTING WORK-SUPPORT. The work-table is mounted on pivots so that it may be set at different angles to the saw.
60. RECIPROCATING-SAW MACHINES. All sawing-machines not designed for sawing special articles or materials in which reciprocating saws are used.
Search Classes—
29—METAL-WORKING, subclass 73, Sawing, Reciprocating-saw. 125—STONE-WORKING, subclass 18, Sawing stone.
61. RECIPROCATING-SAW MACHINES, DRAG. Reciprocating-saw machines consisting of a crosscut or buck saw and a supporting-frame which guides the saw in its movement and which may or may not include devices for transmitting power to the saw.
62. RECIPROCATING-SAW MACHINES, DRAG, AUTOMATIC RETURN. Drag-saw machines in which the return movement of the saw is assisted or brought about by means of a spring or weight.
63. RECIPROCATING-SAW MACHINES, DRAG, CRANK. Movement is imparted to the drag-saw by some form of crank mechanism.
Search Class—
29—METALWORKING, subclass 73, Sawing, Reciprocating-saw.
64. RECIPROCATING-SAW MACHINES, DRAG, LEVER. Movement is imparted to the drag-saw by means of lever mechanism.
Search Class—
29—METALWORKING, subclass 73, Sawing, Reciprocating-saw.
65. RECIPROCATING-SAW MACHINES, DRAG, LEVER-AND-BOW. The driving mechanism includes a lever and swinging bow carrying belts.
66. RECIPROCATING-SAW MACHINES, DRAG, LEVER AND GEARS. The drag-saw is driven by means of a lever and cooperating gears, usually segmental.
67. RECIPROCATING-SAW MACHINES, DRAG, LEVER AND LAZY-TONGS. The saw is driven by means of a lever and lazy-tongs.
68. RECIPROCATING-SAW MACHINES, DRAG, MOTOR. The saw is driven by some form of motor which is shown in combination with the saw.
Search Class—
121—STEAM ENGINES, subclass 105, Attachments.
69. RECIPROCATING-SAW MACHINES, DRAG, OSCILLATORY. The saw or the saw-frame oscillates upon a pivot.
70. RECIPROCATING-SAW MACHINES, SCROLL. Machines characterized by a small light reciprocating saw adapted to sawing curved patterns in thin material, which is usually fed to the saw by hand.
71. RECIPROCATING-SAW MACHINES, SCROLL, FRAME. The saw is mounted in a frame which oscillates or reciprocates.
72. RECIPROCATING-SAW MACHINES, SCROLL, FREE-END SAW. One end of the saw is gripped by the operating arm and the other is free.
73. RECIPROCATING-SAW MACHINES, SCROLL, SPRING-RETURN. The saw is drawn back by a spring after the cutting stroke.
74. RECIPROCATING-SAW MACHINES, SCROLL, SWIVEL-SAW. The saw is so mounted that it may be rotated on a longitudinal axis.
75. RECIPROCATING-SAW MACHINES, SPECIAL-CUT. The machines are designed to produce lumber of peculiar forms or to saw up irregular material.
76. RECIPROCATING-SAW MACHINES, SPECIAL-CUT, PATTERN-GUIDE. The cut of the saw is determined by a pattern-guide.
77. RECIPROCATING-SAW MACHINES, SPECIAL-CUT, PIVOTED WORK-HOLDER. The work is supported upon a pivoted work-holder and is so presented to the saw that the cut follows an arc of a circle.
78. RECIPROCATING-SAW MACHINES, SPECIAL-CUT, TILTING SAW-FRAME. The saw is supported in a frame which may be so inclined as to make the cut at an angle to the plane of the work-table.
79. RECIPROCATING-SAW MACHINES, LATERALLY-ADJUSTABLE ARM. The saws are capable of lateral adjustment in the saw frame or gate.
80. RECIPROCATING-SAW MACHINES, PISTON-CONNECTED. The saw or saw-frame is directly connected with a fluid-operated piston.

CLASS 143—Continued.

Search Class—

121—STEAM ENGINES, subclass 105, Attachments.

81. RECIPROCATING-SAW MACHINES, VIBRATED-SAW. The saw is caused to vibrate in its own plane during its reciprocation.
82. RECIPROCATING-SAW MACHINES, VIBRATED-SAW, LEVER-DRIVEN. The saw receives its vibratory and reciprocatory motion from a pair of driving-levers.
83. RECIPROCATING-SAW MACHINES, VIBRATED-SAW, PIVOTED-GUIDES. The saw is made to vibrate during its reciprocations by means of the rocking of pivoted guides.
84. RECIPROCATING-SAW MACHINES, ROLLER-FEED. The work is presented to the saw by means of feed-rollers.
Search Classes—
143—WOOD-SAWING, subclasses 55, Circular-saw machines, Roller-feed; 56, Circular-saw machines, Roller-feed, Gang.
144—WOODWORKING, subclasses 245, Feed and presser mechanisms, Rolls, Feed, Miscellaneous et seq.; 177, Planers, Rotary-cutter, Cylinder.
85. TUBULAR-SAW MACHINES. Sawing-machines in which the saw is tubular in form.
Search Classes—
79—BUTTON-MAKING, subclass 16, Blank-sawing, Tubular saw.
144—WOODWORKING, subclass 23, Special-work machines, Single or combined, Disk-cutting, Rotary tubular-cutter.
86. MITER-BOXES. Devices for holding lumber and guiding an ordinary handsaw in the operation of cutting.
87. MITER-BOXES, ADJUSTABLE. Miter-boxes in which the relative position of saw-guide and work-holder can be readily changed.
88. MITER-BOXES, ADJUSTABLE, BIPLANE. Miter-boxes capable of adjustment in both horizontal and vertical planes.
89. MITER - BOXES, ADJUSTABLE, SWINGING SAW-GUIDE. Miter-boxes having fixed work-guides and saw-guides which swing in one plane.
90. MITER-BOXES, ADJUSTABLE, SWINGING WORK-GUIDE. Miter-boxes which have fixed saw-guides and whose work-guides swing in one plane.
91. SAW-BUCKS. Supports, usually provided with gripping devices, for holding a log while being sawed.
92. LOG-TRANSFERS. Apparatus of various kinds for conveying logs from one part of a sawmill to another.
93. LOG-TRANSFERS, PUSHER-BLOCKS. Traveling blocks which shift the position of the log on the log-deck.
94. LOG-TRANSFERS, TROUGH-AND-KICKER. Apparatus for forcing the log out of the jack-trough and upon the log-deck of the mill.
95. LOG TURNERS AND DECK BLOCKS. Devices embodying both turners and deck-blocks which are driven by the same mechanism.
96. LOG-DECK BLOCKS. Devices for preventing the rolling of logs from the log-deck to the carriage and for loading the logs upon the carriage.
97. LOG-TURNERS. Devices which turn the log on the log-carriage and which may serve to roll the log from the deck to the sawmill-carriage.
98. LOG-TURNERS, BAR-AND-CHAIN. Log-turners having toothed bars to engage with the log and chains to communicate movement to the bars.
99. LOG-TURNERS, BAR AND INCLINED PISTONS. Log-turners in which the turning-bar is actuated by two pistons set at an angle to one another.
100. LOG-TURNERS, BAR AND PARALLEL PISTONS. Log-turners consisting of a toothed bar operated by a pair of parallel pistons.
101. LOG-TURNERS, BAR-AND-PISTON. Log-turners consisting of a turning-bar driven by a single piston.
102. LOG-TURNERS, ENDLESS. Log-turners provided with a spurred chain running over sprockets or having one or more toothed wheels which engage with the log.
103. LOG-TURNERS, HOOK. Log-turners having a hook which engages the log and which is moved by various means.
104. LOG-TURNERS, HOOK-AND-CHAIN. Log-turners consisting of hooks to engage with the log and chains connected therewith for pulling the log over.
105. SAWMILL-CARRIAGES. Log-carriages for sawmills, together with driving means therefor and such attachments as are not otherwise classified.
106. SAWMILL-CARRIAGES, FRICTION-FEED. Sawmill-carriages to which power is applied through friction-gears.
Search Class—
74—MACHINE ELEMENTS, subclass 26, Gearing, Frictional.

CLASS 143—Continued.

107. SAWMILL-CARRIAGES, FRICTION-FEED, DISK. The feed mechanism involves a friction-disk.
Search Class—
74—MACHINE ELEMENTS, subclass 26, Gearing, Frictional.
108. SAWMILL-CARRIAGES, MOTOR-FEED. The feed mechanism involves some form of motor which is directly connected with the carriage.
109. SAWMILL-CARRIAGES, OFFSETTING. The carriage is provided with mechanism for giving it an offset from the saw on its backward movement.
110. SAWMILL-CARRIAGES, OFFSETTING, DRAFT-OPERATED. The offsetting mechanism is operated by reversing the strain upon the draft-bar of the carriage.
111. SAWMILL-CARRIAGES, OFFSETTING, FRICTION-OPERATED. The offsetting mechanism is set in operation by means of friction-clutches which are thrown into operative position by reversing the movement of the carriage.
112. SAWMILL-CARRIAGES, OFFSETTING, LEVER-OPERATED. The offsetting mechanism is actuated through a lever which is thrown by the operator.
113. SAWMILL-CARRIAGES, OFFSETTING, TRACK-OPERATED. The carriage is offset by means of a trip which engages with some portion of the track on the backward movement of the carriage.
114. SAWMILL SET-WORKS. Devices for shifting the knees of a sawmill-carriage to move the log laterally on the carriage.
115. SAWMILL SET-WORKS, AUTOMATIC. Sawmill set-works which are automatically advanced and retracted by the movements of the carriage.
116. SAWMILL SET-WORKS, DIRECT-ACTUATED. Sawmill set-works which are operated by means of mechanism acting directly upon the knees without the intervention of a set-shaft.
117. SAWMILL SET-WORKS, END DOGS. Sawmill set-works provided with dogs which grip the end of the log.
118. SAWMILL SET - WORKS, FLUID - OPERATED. The head-blocks are advanced and retracted by means of a steam or air driven piston.
Search Class—
121—STEAM ENGINES, subclass 105, Attachments.
119. SAWMILL SET-WORKS, PAWL-AND-RACK. The set-works are driven by simple pawl-and-rack mechanism.
120. SAWMILL SET-WORKS, POWER-OPERATED. Sawmill set-works driven by the same power which drives the sawmill-carriage.
121. SAWMILL SET-WORKS, SPRING-RETRACTED. The head-blocks are provided with springs which retract the blocks when they are thrown out of engagement with the driving devices.
122. SAWMILL SET-WORKS, SUPPLEMENTAL SUPPORT. Sawmill set-works provided with additional log-supporting devices between the head-blocks.
123. SAWMILL SET-WORKS, WEDGE. Sawmill set-works moved forward by one or more wedges.
124. SAWMILL SET-WORKS, APPLIANCES. Clamping devices, gages, and other attachments for sawmill set-works.
125. SAWMILL-DOGS. Devices for holding the log upon the carriage of a sawmill.
126. SAWMILL-DOGS, LEVER. The gripping devices are actuated by means of a lever or system of levers.
127. SAWMILL-DOGS, LEVER-AND-CAM. The points are forced into operative position by means of a cam which is turned by a lever.
128. SAWMILL - DOGS, LEVER AND COÖPERATING GEARS. The dogs are actuated by coöperating gears which are driven by means of a lever.
129. SAWMILL-DOGS, LEVER, GEAR AND RACK. The dogs are thrown into engagement with the log by means of a rack which coöperates with a lever-driven gear.
130. SAWMILL-DOGS, LEVER, PAWL AND RACK. A lever operates a pawl-and-rack mechanism for forcing the dogs into the log.
131. SAWMILL-DOGS, SCREW. The points are forced into the log by means of a screw. The points may or may not be attached directly to the screw.
132. SAW-TABLES. Tables for sawing-machines and adjusting devices therefor.
Note.—Tables for mitering and other special operations are classified with the machines performing those operations.
133. SAWS. All saws in which the teeth are integral with the body of the saw.
134. SAWS, BENT. The saw is curved or bent at an angle, so that it will make a curved or angular kerf.

CLASS 143—Continued.

135. **SAWS, CHAIN.** Saws consisting of a number of connected links provided with cutting edges.
- Search Classes—**
144—WOODWORKING, subclasses 72, Mortising, Chain-cutter, and 73, Mortising, Chain-cutter, Portable.
56—HARVESTERS, subclass 42, Cutting apparatus, Endless.
136. **SAWS, DISHED.** The saw is made concave on one side.
137. **SAWS, EXPANSION-APERTURE.** The saw has a series of openings so placed as to compensate for the unequal expansion of the saw while in use.
138. **SAWS, GUMMING-APERTURE.** The saws are provided with a series of openings near the teeth to prevent gumming.
139. **SAWS, SECTIONAL.** The saw is made up of a number of sections.
140. **SAWS, SMOOTHING.** Saws having planer-teeth for smoothing the sides of the kerf.
141. **SAW-TEETH.** Detachable teeth for insertion into or attachment to saw-blades.
142. **SAW-TEETH, CROSS-CUT.** Teeth especially designed for cross-cut-saws.
143. **SAW-TEETH, PLANER.** Saw-teeth designed to cut and smooth a kerf simultaneously.
144. **SAW-TEETH, REVERSIBLE.** Saw-teeth having two cutting bits and adapted to be reversed when one bit becomes useless.
145. **SAW-TEETH, FASTENINGS.** Means for attaching separable teeth to saw-blades.
146. **SAW-TEETH, FASTENINGS, BRIDGE-PLATE.** The tooth is mounted in a removable plate instead of being attached directly to the saw.
147. **SAW-TEETH, FASTENINGS, CAP.** The bodies of the teeth are integral with the saw-blade and the detachable portions are in the form of tips which are fitted over projections on the periphery of the saw.
148. **SAW-TEETH, FASTENINGS, CAP, SEPARABLE-BIT.** The cutting-bit is mounted in a cap which is fitted on a projection upon the periphery of the saw.
149. **SAW-TEETH, FASTENINGS, KEY.** The teeth are held in their recesses in the saw-blade by gibs, rivets, or screws.
150. **SAW-TEETH, FASTENINGS, KEY AND LOCKING-PLATE.** The tooth is retained in its position by means of a locking-plate and a key.
151. **SAW-TEETH, FASTENINGS, LOCKING-PLATE.** The tooth is held in its recess in the saw-blade by means of a locking-plate with or without gibs or rivets.
152. **SAW-TEETH, FASTENINGS, SPRING-LATCH.** The teeth are retained in the recesses by a spring-catch which may form a part of the base of the tooth.
153. **SAW-TEETH, FASTENINGS, WEDGE.** The teeth are held in recesses in the saw by means of a wedge which may operate between the tooth and saw-blade or which may expand the base of the tooth.
154. **SAW-TEETH, FASTENINGS, WEDGE AND LOCKING-PLATE.** A wedge serves to hold a clamping-plate in engagement with the removable bit.
155. **SAW-HANGING, CIRCULAR-SAW.** Devices for attaching circular saws to their supporting-arbors, and in some instances devices supporting the arbor in the saw-frame.

CLASS 143—Continued.

156. **SAW-HANGING, RECIPROCATING-SAW.** Gripping and straining devices for reciprocating saws.
157. **SAWING - MACHINE APPLIANCES.** Miscellaneous devices designed for use upon or in connection with wood-sawing machines.
158. **SAW CLEANERS AND OILERS.** Attachments to sawing-machines which clean and oil the saws.
159. **SAW-GUARDS.** Shields of various kinds which are intended to cover saws while in operation and prevent the receipt of injuries therefrom.
- Search Class—**
144—WOODWORKING, subclass 251, Cutter guards.
160. **SAW-GUIDES.** Devices for keeping the saw in its kerf and consisting usually of jaws between which the saw passes.
161. **SAW-GUIDES, BACK-DISK.** Saw-guides, usually for band-saws, which are provided with a disk, usually rotatable, against which the saw presses when it is forced back by the work.
162. **SAW-GUIDES, BACK-ROLLER.** Saw-guides, usually for band-saw machines, which have a rotating cylinder for the back of the saw to press against when forced back by the work.
163. **SAW-GUIDES, DRAG.** Saw-guides for common crosscut-saws to enable one man to operate the saw. Used mainly in felling trees.
164. **SAW-GUIDES, OILERS.** Saw-guides provided with devices for lubricating the saw-blade.
165. **SAW-GUIDES, PIVOTED-ARM.** Saw-guides having one or both arms mounted on pivots, so that the opening of the jaws may be varied at will.
166. **SAW-GUIDES, SLIDING-ARM.** Saw-guides having one or both jaws mounted upon sliding arms.
167. **SAW-GUIDES, WORK-ENGAGING.** Saw-guides which are adapted to engage with the work to hold or guide it while being sawed.
168. **SAW-TABLE GAGES.** Devices attached to the tables of sawing-machines for gaging the cut of the saw.
169. **SAW - TABLE GAGES, ANGULAR - ADJUSTMENT.** Gages which may be set at an oblique angle to the plane of the saw.
170. **SAW-TABLE GAGES, ANGULAR-ADJUSTMENT, VERTICAL.** Gages angularly adjustable in a vertical plane only.
171. **SAW - TABLE GAGES, CURVE - CUTTING.** Gages designed especially for sawing out curved patterns.
172. **SAW-TABLE GAGES, MARKERS.** Marking gages attached to sawing-machines.
173. **SAW TABLE GAGES, ROLLER.** Gages provided with a roller for contact with the lumber.
- Search Class—**
143—WOOD-SAWING, subclass 5, Resawing-Machines, Band-saw.
174. **SAW-TABLE GAGES, SLIDING.** Gages slidably mounted upon the saw-tables and for the most part shifted by hand.
- Search Class—**
143—WOOD-SAWING, subclass 160, Saw-table gages, Angular-adjustment.
175. **SAW-TABLE GAGES, SLIDING, LINK.** Sliding gages operated by link mechanism.
176. **SAW-TABLE GAGES, SLIDING, RACK-AND-PINION.** Sliding gages operated by a rack and pinion.

CLASS 144.—WOODWORKING.

DEFINITIONS.

Class.

This class includes all machines and processes for working in wood not classified elsewhere under more specific titles, and also some structural stock of wood embossed with ornamental designs.

Subclasses.

1. COMBINED MACHINES. Machines of general utility, not otherwise specifically classified, which are adapted to either simultaneously or independently perform two or more operations upon the material.

Note.—Machines having combined operations for making particular articles and not capable of general use are to be found under Special-work machines in this class.

2. SPECIAL-WORK MACHINES. Machines not otherwise specifically classified, which are adapted to perform some special work or make some special article and which, unless modified to a considerable degree, would not be useful for general wood-working operations.

Note.—Machines performing single operations even when designed for special work are usually not very different from general single-operation machines, and when this is so are classified with those machines of general utility.

3. SPECIAL-WORK MACHINES, COMBINED. Special-work machines adapted to perform two or more operations.

4. SPECIAL-WORK MACHINES, COMBINED, CIRCULAR-SECTION. Machines adapted to work on spindles, balusters, and similar work which is circular in cross-section.

5. SPECIAL-WORK MACHINES, COMBINED, BLIND AND SASH CUTTING. Machines adapted to perform two or more operations in the making of blinds or sashes. Machines for performing the single operations—such as planing, tenoning, shaping, etc.—are classified under these various headings with general operation machines.

6. SPECIAL-WORK MACHINES, COMBINED, BLIND AND SASH CUTTING, RELISHING. Machines adapted to relish the frames of sashes or blinds by more than a single operation.

7. SPECIAL-WORK MACHINES, COMBINED, BOX-BLANK. Machines adapted by more than one operation to cut box-blanks.

Note.—Machines for performing single operations in the production of box-blanks are classified with the general machines performing such respective operations.

8. SPECIAL-WORK MACHINES, COMBINED, CHAIR-ROUND TENONING AND SAWING. Machines adapted to trim off and tenon chair-rounds.

Search Class—

144—WOODWORKING, subclass 205, Tenon-turning.

9. SPECIAL-WORK MACHINES, COMBINED, CLOTHES-PIN. Machines adapted to perform two or more operations in the manufacture of clothes-pins.

10. SPECIAL-WORK MACHINES, COMBINED, CONVEYER-FLIGHT. Machines adapted to perform two or more operations in the manufacture of conveyer-flights.

11. SPECIAL-WORK MACHINES, COMBINED, HANDLE. Machines adapted to perform two or more operations in the manufacture of handles for various implements.

12. SPECIAL-WORK MACHINES, COMBINED, PIN. Machines adapted to perform two or more operations in the manufacture of wooden pins.

Search Class—

144—WOODWORKING, subclass 30, Special-work machines, Single or combined, Pin-pointing, and subclass 196, Punching-cutters.

13. SPECIAL-WORK MACHINES, COMBINED, SHINGLE. Machines adapted to perform two or more operations in the manufacture of shingles.

14. SPECIAL-WORK MACHINES, COMBINED, SPOOL. Machines adapted to perform two or more operations in the manufacture of spools or bobbins.

15. SPECIAL-WORK MACHINES, COMBINED, WHEEL TENONING AND BORING. Machines adapted to bore holes in the hub or the felly and turn tenons upon the spokes.

16. SPECIAL-WORK MACHINES, COMBINED, WHEEL-HUB. Machines adapted to perform two or more operations in making wheel-hubs.

CLASS 144—Continued.

17. SPECIAL-WORK MACHINES, COMBINED, WHEEL-FELLY BORING AND SAWING. Machines adapted to saw the ends of the felly and also bore the spoke-holes.

18. SPECIAL-WORK MACHINES, COMBINED, WHEEL-SPOKE TENONING AND SAWING. Machines adapted to saw the spoke ends to uniform length and turn the tenons.

19. SPECIAL-WORK MACHINES, COMBINED, WINDOW-STILE-POCKET CUTTING. Machines adapted to cut the pocket by means of two or more operations.

20. SPECIAL-WORK MACHINES, SINGLE OR COMBINED, DISK CUTTING AND BORING. Machines which cut out cylindrical blanks and bore them longitudinally by means of a bit which passes down through the center of the hollow cutter.

21. SPECIAL-WORK MACHINES, SINGLE OR COMBINED, DISK-CUTTING. Machines adapted to cut out or to cut out and otherwise shape disks, usually for corks, bungs, etc.

22. SPECIAL-WORK MACHINES, SINGLE OR COMBINED, DISK-CUTTING, BLANK SAWING, FEEDING, AND PUNCHING. Machines which sever blanks from pieces of wood by means of a saw, feed the blanks to a cutter, and finally cut out the disks from the blanks.

23. SPECIAL-WORK MACHINES, SINGLE OR COMBINED, DISK-CUTTING, ROTARY TUBULAR-CUTTER. Machines for cutting disks, usually of cork, by means of a tubular cutter, which is rotated as it is brought into contact with the work in order to obtain a shearing cut.

Search Class—

142—WOOD-TURNING, subclass 32, Circular-section, Hollow cutter-head.

24. SPECIAL-WORK MACHINES, SINGLE OR COMBINED, DISK-CUTTING, SWEEP-CUTTER. Cork and bung cutting machines having one or more cutting-blades mounted in a rotating block, most of them having means for setting the blades at varying distances from the center and for setting them at an angle in order to cut tapering corks or bungs.

25. SPECIAL-WORK MACHINES, SINGLE OR COMBINED, BOX-HOOPING. Machines adapted to perform the operation of hooping small boxes, usually by wire.

26. SPECIAL-WORK MACHINES, SINGLE OR COMBINED, COMB-TEETH CUTTING. Machines adapted to cut comb-teeth in the manufacture of combs.

27. SPECIAL-WORK MACHINES, SINGLE OR COMBINED, HINGE-SEAT CUTTING. Machines adapted to cut the mortise or bed in the wood in which a hinge is to be placed.

28. SPECIAL-WORK MACHINES, SINGLE OR COMBINED, PENCIL-WOOD MAKING. Machines adapted to perform such operations in the manufacture of pencil-wood as are not elsewhere specifically classified.

Note.—Machines for performing one of such operations as splitting, slicing, sawing, planing, turning, etc., are placed in the respective classes with machines of general utility.

Search Class—

144—WOODWORKING, subclass 41, Combined machines, Shaping and dividing.

29. SPECIAL-WORK MACHINES, SINGLE OR COMBINED, PIANO-HAMMER FELTING. Machines adapted to fold glue-covered felt about and secure it by pressure to piano-hammers.

30. SPECIAL-WORK MACHINES, SINGLE OR COMBINED, PIN-POINTING. Machines adapted to point pins of various kinds, as fence-pickets, skewers, shoe-pegs, hop-poles, dowel-pins, etc.

Search Class—

142—WOOD-TURNING, subclasses 32, Circular-section, Hollow cutter-head; 27, Circular-section, Hollow cutter-head, Cutter, Chisel; 28, Circular-section, Hollow cutter-head, Cutter, Chisel, Radially-movable, Pattern-guide, Rotary; 29, Circular-section, Hollow cutter-head, Cutter, Chisel, Radially-movable; and 30, Circular-section, Hollow cutter-head, Cutter, Chisel, Pattern Radially-movable.

31. SPECIAL-WORK MACHINES, SINGLE OR COMBINED, PIN-SETTING. Machines for setting or inserting wooden pins for various purposes.

32. SPECIAL-WORK MACHINES, SINGLE OR COMBINED, SCREW-DRIVING. Machines adapted to set or drive screws.

Search Classes—

10—BOLT, NAIL, NUT, RIVET AND SCREW MAKING, subclass 155, Bolt and nut assembling.

81—TOOLS, subclass 64, Wrenches, Machine.

CLASS 144—Continued.

33. SPECIAL-WORK MACHINES, SINGLE OR COMBINED, TRAY-MAKING. Machines for cutting out veneer dishes or wooden bowls and trays of greater thickness than veneer.
- Search Class—**
143—COOPERING, subclass 36, Barrel-head making and subclasses thereunder.
34. SPECIAL-WORK MACHINES, SINGLE OR COMBINED, TREE-FELLING. Various apparatus for cutting down trees.
- Search Class—**
143—WOOD-SAWING, subclass 61, Reciprocating-saw machines, Drag, and subclasses thereunder.
35. COMBINED MACHINES, BORING AND SAWING. Machines adapted to bore and saw.
36. COMBINED MACHINES, PLANING AND MATCHING. Machines for surfacing lumber, tonguing one edge and grooving the other.
- Search Class—**
144—WOODWORKING, subclass 117, Planers, Rotary-cutter, Cylinder.
37. COMBINED MACHINES, PLANING, MATCHING, AND DIVIDING. Machines for surfacing wide boards, dividing them longitudinally into two or more strips, and tonguing and grooving each strip.
38. COMBINED MACHINES, PLANING AND POLISHING. Machines adapted to plane lumber and then further smooth it by means of a polisher.
- Search Class—**
51—GRINDING AND POLISHING, subclass 13, Wood, Plane surfaces.
39. COMBINED MACHINES, PLANING AND SAWING. Machines adapted to plane and saw up lumber.
40. COMBINED MACHINES, RIVING AND SHAVING. Machines for riving and shaving rattan, hoop-poles, or the like at one operation.
41. COMBINED MACHINES, SHAPING AND DIVIDING. Machines for giving some predetermined contour to several parallel pieces of work and simultaneously dividing them from a common piece of stock and from each other.
- Search Class—**
144—WOODWORKING, subclass 136, Shaping, Grooving.
42. COMBINED MACHINES, SLICING AND SCORING. Slicing-machines which have devices for scoring the face of the bolt from which the slices are cut.
43. COMBINED MACHINES, SLICING AND SHAVING. Machines which cut slices from a block of wood and then shave the surfaces smooth.
44. COMBINED MACHINES, SLICING AND SHAVING, CONVERGING KNIVES. Combined slicing and shaving machines in which the severed slice is simultaneously shaved and beveled by a pair of converging knives.
- Search Class—**
144—WOODWORKING, subclass 126, Planers, Beveling, Longitudinal, Shifting-cutter.
45. COMBINED MACHINES, TENONING AND BORING. Machines adapted to bore and, sometimes simultaneously, also turn a tenon.
46. COMBINED MACHINES, TURNING AND BORING. Combined lathe and boring machines.
47. COMBINED MACHINES, TURNING AND POLISHING. Combined lathe and polishing machines.
48. COMBINED MACHINES, TURNING AND SAWING. Combined lathe and sawing machines.
49. MISCELLANEOUS SINGLE-OPERATION MACHINES. Machines performing only one operation, as distinguished from the combined machines, and not otherwise specifically classified.
50. MATCH-MAKING. Machines which sever splints and then carry them through one or more of the processes necessary to the production of matches or which take the splints already severed and pass them through one or more of the operations involved in the conversion of the splints into matches. Machines for boxing the finished matches are included under this head also.
51. MATCH-MAKING, WAX AND PAPER. Machines for the manufacture of matches from paper-board or waxed cord instead of wooden splints.
52. MATCH-MAKING, CUTTING, FRAMING, AND DIPPING. Machines which sever splints from blocks or veneers and carry them through all the operations necessary to the production of the finished matches.
53. MATCH-MAKING, CUTTING, FRAMING, AND DIPPING, DIE-PUNCHES. Cutting, framing, and dipping machines in which the cutting of the splints is done by reciprocating die-punches which carry the severed splints to and insert them into the dipping-frames.

CLASS 144—Continued.

54. MATCH-MAKING, CUTTING AND FRAMING. Machines which cut the match-splints from veneers or blocks and mount the splints in frames or conveyers for dipping.
55. MATCH-MAKING, CUTTING AND FRAMING, DIE-PUNCHES. Cutting and framing machines which sever the splints from the block by means of reciprocating die-punches which carry the splints to the frames and insert them therein.
56. MATCH-MAKING, CUTTING AND FRAMING, DIE-PUNCHES, FIXED. The punches are fixed in position and the block is fed to them, the splints being severed at each movement, forcing out of the punches those cut at the preceding stroke.
57. MATCH-MAKING, CUTTING AND COILING. Machines which sever the splints from blocks or veneers and wind them into coils for dipping.
58. MATCH-MAKING, FRAMING AND DIPPING. Machines which insert the severed splints or splint-blocks into dipping-frames or conveyers and dip the splints into the baths necessary to form the heads. In most of these machines the splints are fed from a hopper to some form of conveyer.
59. MATCH-MAKING, COILING. The match-splints are fed from a hopper or some other holding means to devices which coil the splints into bunches by means of tapes or cords.
60. MATCH-MAKING, DIPPING. Machines which form the head upon the framed or coiled match-splints, but which do not insert the splints into frames or conveyers. Features of conveyer construction are sometimes shown.
61. MATCH-MAKING, BOX-FILLING. Machines for boxing matches or other small splints and not including mechanism for performing any of the operations involved in the manufacture of the matches, or of the boxes.
- Search Classes—**
144—WOODWORKING, subclass 191, Slivering, Receiving and handling devices.
93—PAPER MANUFACTURES, subclass 6, Wrapping machines, Receptacle filling and closing.
62. MATCH-MAKING, DIPPING-FRAMES, EMPTYING. Machines which expel the matches from the dipping-frames or conveyers after the completion of the dipping process.
63. MATCH-MAKING, DIPPING-FRAMES, FILLING. Machines for inserting match-splints into dipping-frames or conveyers or interweaving them with cords, wires, or tapes which serve in lieu of frames.
64. MATCH-MAKING, DIPPING-FRAMES, FILLING, HOPPER-FEED. Machines for filling dipping-frames, in which the splints are fed from a hopper to the inserting devices.
65. MATCH-MAKING, DIPPING-FRAMES. Frames for holding match-splints during the operation of dipping and methods of interweaving match-splints with cords, wires, or tapes to serve in lieu of frames.
- Search Class—**
144—WOODWORKING, subclasses 52, Match-making, Cutting, Framing, and dipping and subclass thereunder; 54, Match-making, Cutting and framing, and subclasses thereunder; 58, Match-making, Framing and dipping; 60, Match-making, Dipping; 62, Match-making, Dipping frames, Emptying; 63, Match-making, Dipping frames, Filling, and subclass thereunder; 66, Match-making, Splint-feed mechanism.
66. MATCH-MAKING, SPLINT-FEED MECHANISM. Devices for feeding the match-splints to the machines which convert them into finished matches, including hoppers, conveyer-belts, and means for communicating motion to the belts.
- Search Class—**
144—WOODWORKING, subclass 52, Match-making, Cutting, Framing and dipping, and subclass thereunder; 58, Match-making, Framing and dipping.
67. MORTISING, MULTIPLE-CHISEL. Chisel mortising-machines in which there are several chisels with means for operating them.
68. MORTISING, MULTIPLE-CHISEL, PORTABLE. Multiple-chisel mortisers adapted to be moved about and placed upon the work, generally clamped thereto, and driven by hand-cranks. The cutter-carriage is usually fed along instead of feeding the work, as in stationary machines.
69. MORTISING, AUGER-CUTTER. Mortising by augers which have side and end cutting edges. They first bore into the wood and then by a side movement cut any width of mortise desired.
70. MORTISING, AUGER-CUTTER, PORTABLE. Auger-cutter mortisers adapted to be moved about and placed upon the work, generally clamped thereto, and driven by hand-cranks. The cutter-carriage is usually fed along instead of feeding the work, as in stationary machines.
71. MORTISING, AUGER-CUTTER, AUTOMATIC STEP-FEED. Auger-cutter mortisers having a step-feed and also a diagonal feed, by which a succession of inclined mortises are formed in blind-stiles to take the ends of the slats.

CLASS 144—Continued.

Search Class—

144—WOODWORKING, subclass 219, Cutters, Rotary, End thrust.

72. MORTISING, CHAIN CUTTER. Machines which cut mortises by means of a series of chisel-cutters carried by a moving endless chain supported on a frame by pulleys, which is presented to the work at the pulley end.
73. MORTISING, CHAIN CUTTER, PORTABLE. Chain mortising-machines which are adapted to be moved about and placed upon the work, generally clamped thereto, and driven by hand-cranks. The cutter-carriage is usually fed along instead of feeding the work, as in stationary machines.
74. MORTISING, CHISEL, BORING AND MORTISING. Includes mortising-machines which are provided with boring attachments, not including those in which the bit is placed inside a hollow chisel.
75. MORTISING, CHISEL. Mortising-machines which cut a mortise by means of a reciprocating chisel.

Search Class—

90—GEAR-CUTTING, MILLING AND PLANING, subclass 43, Planing, Planers, Reciprocating-cutter, Vertical, and subclasses thereunder.

76. MORTISING, CHISEL, PORTABLE. Chisel mortising-machines which are adapted to be moved about and placed upon the work, generally clamped thereto, and driven by hand-cranks. The cutter-carriage is usually fed along instead of feeding the work, as in stationary machines.
77. MORTISING, CHISEL-REVERSERS. Constructions for reversing the chisel in order to square the mortise at each end.
78. MORTISING, HOLLOW-CHISEL AND BIT. Mortising-machines having a hollow square chisel with a boring-bit operating inside thereof.
79. MORTISING, HOLLOW-CHISEL AND BIT, PORTABLE. Hollow-chisel and bit machines adapted to be moved about and placed upon the work, generally clamped thereto, and driven by hand-cranks. The cutter-carriage is usually fed along instead of feeding the work, as in stationary machines.
80. MORTISING, OSCILLATING-CHISEL. Machines which have a bar upon the end of which is a pivoted chisel having its edge at right angles to the bar and which is oscillated and cuts its way into the wood to form a mortise.
81. MORTISING, OSCILLATING-CHISEL, PORTABLE. Oscillating-chisel mortisers which are adapted to be moved about and placed upon the work, generally clamped thereto, and driven by hand-cranks. The cutter-carriage is usually fed along instead of feeding the work, as in stationary machines.
82. MORTISING, ROTARY-CUTTER. Machines for cutting a mortise by means of a rotating cutter carrying knives upon its periphery.
83. MORTISING, ROTARY-CUTTER, PORTABLE. Rotary cutter mortisers adapted to be moved about and placed upon the work, generally clamped thereto, and driven by hand-cranks. The cutter-carriage is usually fed along instead of feeding the work, as in stationary machines.
84. MORTISING, WORK-SUPPORTS. Clamps for holding the work, devices for elevating and feeding the carriage, and stops and gages for locating the mortise where they form part of the machine structure. Gages which are mere tools are classified as measuring instruments.
85. DOVETAILING. Machines specialized for forming undercut grooves, not otherwise classifiable.
86. DOVETAILING, CONSECUTIVE CUTTERS. Machines in which the dovetailed groove is formed by the successive action of two or more dissimilar cutters.
87. DOVETAILING, FRUSTO-CONICAL BIT. Machines in which the undercut groove is formed by the relative lateral movement of a bit broader at the point than at the shank.

Search Class—

144—WOODWORKING, subclass 86, Dovetailing, Consecutive cutters.

88. DOVETAILING, INCLINED-CHISEL. Machines having pairs or sets of chisels reciprocating at an angle to each other and the work to produce undercut recesses.
89. DOVETAILING, INCLINED ROTARY-DISK. Machines producing undercut-grooves by means of toothed disks having an inclination to each other or to the work-support, which is less than a right angle.

90. MATCHING. Machines for producing a tongue on one edge and a groove on the other edge of a piece of lumber.

Search Class—

144—WOODWORKING, subclasses 36, Combined machines, Planing and matching, and 37, Combined machines, Planing, Matching, and Dividing.

91. MATCHING, END. Machines for cutting matching tongues and grooves across the ends of flooring material, etc.

CLASS 144—Continued.

92. BORING. Miscellaneous features not otherwise classified.

Note.—Boring hubs, fellies, and tenoning spokes and boring and mortising are in this class under their various subclass titles.

Search Class—

77—BORING AND DRILLING.

93. BORING, SPECIAL-WORK. Machines, not otherwise classified, designed to work on some special article, as to bore chair-seats, spools, shoe-lasts, etc., and not adapted, without modification, for general boring purposes.
94. BORING, BRUSH, MULTIPLE-BIT. Machines in which a series of bits are adapted to simultaneously bore holes in a brush-block at various angles with the surface in order that the bristles when inserted will have the proper flare.
95. BORING, BRUSH, ROTATING WORK-HOLDER. Machines for boring blocks for round brushes. The block is rotated to position for boring the next hole after each hole is bored.
96. BORING, BRUSH, TILTING WORK-HOLDER. Machines in which a more or less flat brush-block is successively tilted to the various angles desired for the holes to be bored, so that the bristles when inserted will have the proper flare.
97. BORING, WHEEL-HUB. Machines adapted to bore spoke-holes in the hub.

Search Class—

144—WOODWORKING, subclass 15, Special-work machines, Combined, Wheel tenoning and boring.

98. BORING, WHEEL-HUB, AXIAL, STATIONARY BIT-STOCK. Machines in which the work is rotated while the bit-stock remains stationary.
99. BORING, WHEEL-HUB, AXIAL, STATIONARY-WORK. Machines in which the work is stationary and the bit is made to rotate.
100. BORING, WHEEL-HUB, AXIAL, STATIONARY-WORK, INCLINED BIT-STOCK. Machines in which the bit-stock is adapted to work, in reaming out the hub, at an angle to the hub-axis.
101. BORING, WHEEL-HUB, AXIAL, STATIONARY-WORK, OPPOSITE ROTARY BIT-STOCKS. Machines in which an upper and a lower bit are adapted to bore simultaneously at opposite ends of the hub.
102. BORING, WHEEL-FELLY. Machines adapted to bore spoke and end holes in wheel-fellies.
103. BORING, SWINGING. Machines pivoted, usually overhead, and adapted to be freely swung to any operative position within their radius. The bit-stock is usually also free to be moved to any angle.
104. BORING, PORTABLE, HAND. Hand-machines for general use adapted to be carried from place to place by the operator.
105. BORING, PORTABLE, HAND, OVERHEAD-WORK. Small hand-machines adapted for boring in joists or other overhead work for the passage of electric-light wires or for other purposes.
106. BORING, PORTABLE, HAND, ANGULARLY-ADJUSTABLE. Machines which can be adjusted to bore at any desired angle with respect to the surface of the work.
107. BORING, LONG-WORK, AUTOMATIC STEP-FEED. Machines in which the work-carriage is adapted to be automatically fed along step by step to successive positions for boring a hole or a series of holes.
108. BORING, LONG-WORK, HAND-OPERATED STEP-FEED. Machines in which the work-carriage is adapted to be moved, from one position for boring to the next, by manually operating some catch or other holding device. The carriage usually has notches or other gage upon it to indicate how far it is to be moved, and the catch falls successively into the notches.
109. BORING, LONG-WORK, TRAVELING-TOOL. Machines in which the work is fed along continuously and the bit, while boring the hole, travels along with the work.
110. BORING, MULTIPLE. Machines for general boring having a plurality of bits and bit-stocks. In some, all of the bits bore simultaneously, in others successively, while in still others any particular bit may be brought into operation.
111. BORING, MULTIPLE, DOUBLE-ENDED, BIT-STOCK. Machines in which the bit-stock or arbor is adapted to receive a bit at each end, whereby both bits may bore simultaneously by the work being moved to the bits, or the latter may operate alternately by reciprocating the stock to and fro between the work.
112. BORING, MULTIPLE, RELATIVE LATERAL ADJUSTMENT. Machines in which the bit-stocks or arbors are relatively adjustable to vary the distance between them and, therefore, the holes bored.

CLASS 144—Continued.

113. **BORING, HOLLOW-AUGER.** Machines adapted for hollow-auger work. Arrangements for operating the augers, for forcing the chips through the center of the auger, for operating two augers, one within the other, etc.
- PLANERS.** Machines for producing plane surfaces on rough lumber and such other machines as can be made to produce plane surfaces by the mere substitution of a straight knife for one of irregular outline.
114. **PLANERS, MISCELLANEOUS.** Machines having cutters for surfacing lumber not classifiable in the other named subclasses.
- Search Classes—**
 144—WOODWORKING, subclasses 36, Combined machines, Planing and matching; 134, Shaping, Miscellaneous.
 90—GEAR-CUTTING, MILLING AND PLANING, all the subclasses under 24, Planing.
 125—STONE-WORKING, subclass 6, Dressing stone.
115. **PLANERS, SCRAPERS.** Machines and devices in which the face of the knife is nearly at right angles to the work while acting, so that there is no true cutting action.
116. **PLANERS, ROTARY-CUTTER, CYLINDER, DOUBLE SURFACERS.** Machines of the rotary-cylinder type adapted to plane both sides of the work simultaneously.
- Search Class—**
 144—WOODWORKING, subclass 36, Combined machines, Planing and matching.
117. **PLANERS, ROTARY-CUTTER, CYLINDER.** Machines in which the knife-edges describe a cylindrical surface in contact with the rectilinearly-moving work.
- Search Class—**
 144—WOODWORKING, subclasses 36, Combined machines, Planing and matching; 37, Combined machines, Planing, Matching, and dividing.
118. **PLANERS, ROTARY-CUTTER, DISK.** Machines in which the knives are set in the face of a disk and describe a circular path in contact with the work.
- Search Class—**
 51—GRINDING AND POLISHING, subclass 13, Wood, Plane surfaces.
119. **PLANERS, ROTARY-CUTTER, DISK, TRAVELING.** Disk machines in which the cutter-carrier has motions of both rotation and translation with respect to the work.
- Search Class—**
 51—GRINDING AND POLISHING, subclasses 13, Wood, Plane surfaces, and 11, Glass and stone, Plane surfaces.
120. **PLANERS, STATIONARY-CUTTER.** Machines in which a knife of the general bench-plane type is fixed and the work forced past it.
- Search Classes—**
 144—WOODWORKING, subclass 155, Shaving, Fixed knife.
 90—GEAR-CUTTING, MILLING AND PLANING, subclasses 34, Planing, Planers, Reciprocating-bed; 35, Planing, Planers, Reciprocating-bed, Rack-drive; 36, Planing, Planers, Reciprocating-bed, Screw-drive.
 125—STONEWORKING, subclass 6, Dressing stone.
121. **PLANERS, RECIPROCATING-CUTTER.** Machines in which the work is held stationary or slowly fed while the cutters reciprocate in the direction of the feed.
- Search Classes—**
 144—WOODWORKING, subclass 147, Shaping, Reciprocating-knife.
 51—GRINDING AND POLISHING, subclass 13, Wood, Plane surfaces.
 90—GEAR-CUTTING, MILLING AND PLANING, all the subclasses under Planing, Planers, Reciprocating-cutter.
122. **PLANERS, RECIPROCATING-CUTTER, LATERAL.** Machines in which the cutters reciprocate at right angles to the line of feed.
123. **PLANERS, ENDLESS-CUTTER CARRIER.** Machines in which a series of connected cutters pass the work always in one direction and return out of contact with the work.
124. **PLANERS, BEVELING, LATERAL.** Machines for surfacing work one side of which is thicker than the other—i. e., for beveling work in a plane at right-angles to the direction of feed.
125. **PLANERS, BEVELING, LONGITUDINAL, INCLINED-WORK-POCKET.** Machines which bevel in the direction of the grain or feed, the work meanwhile resting in a recess deeper at one end than at the other.
- Search Class—**
 144—WOODWORKING, subclass 43, Combined machines, Slicing and shaving.
126. **PLANERS, BEVELING, LONGITUDINAL, SHIFTING-CUTTER.** Machines surfacing work thicker at one end than at the other by moving the cutter in a path substantially at right angles to that of the travel of the work.
- Search Class—**
 144—WOODWORKING, subclass 44, Combined machines, Slicing and shaving, Converging knives.
127. **PLANERS, BEVELING, LONGITUDINAL, SHIFTING WORK-SUPPORT.** Those machines surfacing work thicker at one end than at the other by moving the work holder or guide with reference to the cutter at substantially a right angle to the path of travel of the work.

CLASS 144—Continued.

123. **PLANERS, ENDLESS-BED.** Machines in which the work is carried past the cutter by chain-feed or by connected or disconnected sections continually returned to the front of the machine-frame.
129. **PLANERS, BED ADJUSTMENTS.** Devices for varying the position of the work-supporting bed with reference to the machine-frame and cutter.
130. **PLANERS, CUTTER ADJUSTMENTS.** Means for varying the position of the cutter with reference to the path of the work or to the machine-frame.
131. **PLANERS, ROTARY-CUTTER, CYLINDER, BEARINGS.** Journal-bearings particularly designed to support the cylindrical cutters of wood-planers.
132. **PLANERS, STATIONARY-CUTTER, BIT ADJUSTMENTS.** Means for varying the position of the knife of stationary cutters with reference to the holding-stock or to the work.
133. **GAINING.** Machines for cutting grooves in lumber at substantially right angles to the grain and usually by means of rotary cutters.
- Search Class—**
 144—WOODWORKING, subclasses 203, Tenoning, Rotary gaining-cutters; 204, Tenoning, Rotary gaining-cutters, Multiple-tenon.
- SHAPING.** Machines and devices for producing work of a predetermined shape or pattern, usually of irregular outline or section, in which the depth of cut is not limited and in which structural modifications other than a mere change of cutter outline are necessary to adapt the device for finishing plane surfaces.
134. **SHAPING, MISCELLANEOUS.** Machines for producing work of irregular outline or section not otherwise classifiable.
- Search Class—**
 12—BOOT AND SHOE MAKING, subclasses 46, Heel machines, Bevel and seat cutting; 47, Heel machines, Braasting; 85, Sole and heel edge trimmers, and the subclasses thereunder.
135. **SHAPING, BOX-TRIMMING.** Machines for planing the sides and trimming the covers of boxes.
136. **SHAPING, GROOVING.** Machines for longitudinally scoring and corrugating surfaces.
137. **SHAPING, PATTERN, MISCELLANEOUS.** Machines for working to pattern or for producing predetermined figures and not otherwise classifiable.
- Search Class—**
 12—BOOT AND SHOE MAKING, subclass 85, Sole and heel edge trimmers, and the subclasses thereunder.
138. **SHAPING, PATTERN, POLYGONAL FORMS, INDEXED-WORK.** Machines for forming balusters and other work of regular polygonal cross-section by cutters acting successively on the sides of the work, the work being turned through equal angles by the supporting mechanism to present each side in turn to the cutters and then held stationary during the action of the cutter.
139. **SHAPING, PATTERN, ROTATING-TABLE, SHIFTING-CUTTER.** Machines in which definitely-recurring figures are produced by the combined movements of a rotating work-table and a guided cutter.
- Search Class—**
 144—WOODWORKING, subclass 154, Shaping, Rotary work-carrier.
140. **SHAPING, PATTERN, GEAR-GUIDED CUTTER.** Machines similar to the last preceding in which the transverse cutter motion is controlled by a gear-train or system of change-gears.
- Search Class—**
 147—COOPERING, subclasses 45, Hoop machines, Lapping and pointing, and 46, Hoop machines, Lock-cutting.
141. **SHAPING, PATTERN, CRANK-GUIDED CUTTER.** Machines for producing recurring figures, in which the transverse cutter motion is controlled by a crank.
142. **SHAPING, PATTERN, CAM, CUTTER-GUIDING.** Machines for producing definitely-recurring figures by the combined motion of the work and cutter, the latter being given its motion of a translation by a cam.
143. **SHAPING, PATTERN, CAM, WORK-GUIDING.** Machines similar to the last preceding except that the cam shifts the work transversely with reference to the cutter.
144. **SHAPING, PATTERN, TEMPLET, CUTTER-GUIDING.** Machines for producing definitely-recurring figures by the combined motion of the work and cutter, the latter being controlled by a templet.
- 144.5. **SHAPING, PATTERN, TEMPLET, CUTTER-GUIDING, TEMPLETS.** The construction of a templet to be used in machines of the type indicated by the title.
145. **SHAPING, PATTERN, TEMPLET, WORK-GUIDING.** Machines similar to those in subclass 144 except in that the work is controlled in its transverse motion by a templet.
146. **SHAPING, OSCILLATING-KNIFE.** Devices for shaping work by means of a pivoted knife-arm.

CLASS 144—Continued.

147. **SHAPING, RECIPROCATING-KNIFE.** Machines in which straight or pattern knives are reciprocated in right lines.
148. **SHAPING, REVERSIBLE-CUTTER.** Machines having double cutters, one idle while the other is cutting, and means for reversing both the position of the cutters and their direction of rotation with reference to the feed as may be required by the character of the work.
149. **SHAPING, PATTERN-KNIFE, SWINGING-FRAME.** Machines in which an outlined or pattern knife is mounted after the manner of a swinging saw.
150. **SHAPING, ROTARY-CUTTER, END-THRUST.** Machines having rotary cutters of the disk type, usually with pattern knives, and arranged to give relative movement between cutter and work in the direction of the axis of the cutter.
151. **SHAPING, UNIVERSALLY-JOINTED CUTTER-SHAFT.** Machines in which the cutter-shaft is so mounted as to allow the rotary cutter to have movement of translation in more than one plane.
152. **SHAPING, CURVED-WORK GUIDE.** Machines having such arrangement of guide-rolls or outline of guides as permits the shaping of circular and similar curves.
153. **SHAPING, CURVED-BAR WORK-SUPPORT.** Machines, usually of the vertical-spindle type, having curve-topped bars instead of tables, permitting work to be swung in more than one plane.
154. **SHAPING, ROTARY WORK-CARRIER.** Machines having a work-support capable of carrying work-pieces in a circular path past one or more cutting-tools.
- Search Class—**
144—WOODWORKING, subclass 139, Shaping, Pattern, Rotating-table, Shifting-cutter.
155. **SHAVING, FIXED-KNIFE.** Machines for producing a smooth surface on wood, cane, or rattan and at the same time gaging the thickness of the dressed piece by forcing the material under a fixed knife.
- Note.**—Somewhat similar machines may be found under class 144, WOODWORKING, Planers, Stationary-Cutter, in which class are classified machines otherwise resembling shaving-machines, but having several plane bits mounted in blocks in order to remove the surface material by several successive shallow cuts.
- Search Class—**
144—WOODWORKING, subclasses 120, Planers, Stationary-cutter; 175, Slicers, Fixed-knife. 184, Riving, Fixed-knife.
156. **SHAVING, FIXED KNIFE, CIRCULAR KNIFE-BLOCK.** Machines for shaving rattan which have knives set radially in a circular knife-block, through which the rattan is forced.
- Search Class—**
142—WOOD-TURNING, subclasses 31, Circular section, Hollow cutter-head, Cutter, Chisel; 29, Circular section, Hollow cutter-head, Cutter, Chisel, Radially-movable.
157. **SHAVING, FIXED-KNIFE, DRUM-FEED.** Shaving-machines in which the work is caught by a gripping device on the surface of a drum and drawn under one or more fixed knives.
158. **SHAVING, FIXED-KNIFE, ROLLER-FEED.** Shaving-machines in which feed-rolls are employed as means to convey the work to the knives.
- Search Class—**
144—WOODWORKING, subclass 175, Slicers, Fixed-knife.
159. **SHAVING, KNIFE PAIR.** Shaving-machines provided with a pair of fixed knives, between which the work is fed by various means.
160. **SHAVING, KNIFE PAIR, GRIPPER.** Machines in which the end of the work is clamped by gripping mechanism and drawn between the shaving-knives.
161. **SHAVING, KNIFE PAIR, ROLLER-FEED.** Shaving-machines in which feed-rolls force the work between the pair of fixed knives.
162. **SLICERS.** Machines for cutting up lumber by knife action which without following the direction of the grain divide the lumber into boards, blocks, or strips.
- Search Class—**
144—WOODWORKING, subclasses 182, Riving; 192, Splitting and bundling; 193, Splitting; 194, Splitting, Self-feeding; and 195, Splitting, Self-feeding, Roller and belt.
163. **SLICERS, RESLICERS.** Machines which sever a slice from a block and then divide the slice into smaller pieces.
- Search Class—**
144—WOODWORKING, subclass 195, Splitting, Self-feeding, Roller and belt.
164. **SLICERS, STRIP-CUTTING, CONVERGING KNIVES.** Strips are severed from a log by knives whose edges are set approximately at right angles. No special form of knife is used and no special kind of feed.
165. **SLICERS, STRIP-CUTTING, CONVERGING KNIVES, LATHE-FEED.** The log is centered between chucks and rotated. One knife cuts tangentially and another radially, the former cutting continuously during the rotation of the log and the latter cutting only at intervals to divide the veneer severed from the log by the former.

CLASS 144—Continued.

166. **SLICERS, STRIP-CUTTING, LATHE-FEED.** The log is mounted between a pair of chucks and rotated step by step by ratchet mechanism, the strips being cut by knives mounted in a block which reciprocates longitudinally of the log.
167. **SLICERS, ARC-CUT.** The work rests upon a fixed table and is sliced by an oscillating knife, or the work rests upon an oscillating table which forces the work against a fixed knife.
- Search Class—**
144—WOODWORKING, subclasses 146, Shaping, Oscillating-knife; 33, Special-work machines, Single or combined, Tray-making; and 177, Slicers, Stay-log, Oscillating.
168. **SLICERS, BEVELING, ALTERNATE END-FEED.** The block to be sliced is fed to a reciprocating knife by mechanism which causes each end to be alternately advanced farther than the other, so that the slices severed by the knife shall be thicker at one end than the other.
169. **SLICERS, BEVELING, SHIFTING KNIFE-GUIDE.** The inclination of the knife-guide to the work-supporting table is changed at each stroke of the knife in order to impart a bevel to the slice cut off.
170. **SLICERS, BEVELING, TILTING-GAGE.** The thickness of the slice severed is determined by a tilting gage against which the block is pressed before each cut.
171. **SLICERS, BEVELING, TILTING-TABLE.** The bevel is imparted to the slice by tilting the work-table at each stroke of the knife to change the inclination of the table to the plane of the knife.
172. **SLICERS, CYLINDER.** The slicing-knives are mounted upon the curved surface of a rotating cylinder and the work is fed to the knife in any way desired.
173. **SLICERS, CYLINDER, GROOVING.** Machines having cutting mechanism consisting of one or more cylinders provided with circumferential ribs which divide a sheet of veneer passed under or between them.
174. **SLICERS, CYLINDER, RADIAL-KNIFE.** A rotating cylinder having radial knives divides a veneer into strips, or scores the surface of a log preparatory to the action of a veneer-shaving knife.
175. **SLICERS, FIXED-KNIFE.** The block is cut into slices by being forced by hand or otherwise against a fixed knife.
- Note.**—This does not include machines in which the work is clamped upon a reciprocating carriage which carries it over the knife, such machines being found under class 178, Slicers, Stay-log, reciprocating.
- Search Class—**
144—WOODWORKING, subclasses 120, Planers, Stationary-cutter; 155, Shaving, Fixed-knife; and 184, Riving, Fixed-knife.
176. **SLICERS, ROTARY-DISK.** The cutting-knives are set in an approximately radial position upon a rotary disk and cut in a plane parallel with that of the disk.
177. **SLICERS, STAY-LOG, OSCILLATING.** The work is clamped by a stay-log which oscillates over or in front of a fixed knife. Either knife block, or stay-log may be fed forward by any desired means.
178. **SLICERS, STAY-LOG, RECIPROCATING.** The Stay-log is caused to reciprocate above or in front of a fixed knife. Either knife block, or stay-log may be fed forward by any desired means.
179. **SLICERS, STAY-LOG, SCREW-FEED.** A reciprocating knife severs the slices from a block held by a stay-log which is fed forward by screw mechanism.
180. **SLICERS, HOPPER-FEED.** A slicing-knife reciprocating beneath a hopper in which the block to be sliced is placed. The block may be fed downward by its own weight or pressure may be employed to force it down.
181. **SLICERS, ROLLER-FEED.** The work is fed to the cutting mechanism by rollers which also gage the thickness of the slice.
182. **RIVING.** Machines which divide lumber into approximately equal pieces by means of knives which cut with the grain.
- Note.**—The machines differ from splitting-machines in that they actually cut the material instead of rending it by wedge action, as is done in splitting.
- Search Class—**
144—WOODWORKING, subclasses 162, Slicers, and 193, Splitting.
183. **RIVING, BEVELING.** Riving-machines in which the knife may be shifted with relation to the work-guide, so as to divide the stock into tapered pieces.
184. **RIVING, FIXED-KNIFE.** Machines for dividing rattan, hoopoles, whalebone, and the like by forcing the work against a fixed knife.
- Search Class—**
144—WOODWORKING, subclasses 155, Shaving, Fixed-knife, and 175, Slicers, Fixed-knife.
185. **SLIVERING.** Machines for cutting excelsior, match-splints, or toothpicks and some devices for receiving and handling the product. They differ from match-making machines in not performing any of the operations involved in forming the match-heads. The generic subclass of slivering-machines includes machines of types different from those of the specific subclasses and also attachments for slivering-machines.

CLASS 144—Continued.

Search Class—

144—WOODWORKING, subclasses 196, Punching-cutters, and 197, Punching-cutters, Fixed-die.

186. SLIVERING, SCORING-PLANE. The cutting mechanism consists of a block provided with two sets of cutters, one for scoring the surface and one for severing the slivers from the block.

187. SLIVERING, SCORING-PLANE, ENDLESS-BELT. The scoring-plane is attached to an endless belt or chain which carries it forward, the block being held stationary.

188. SLIVERING, SCORING-PLANE, ROTARY. The scoring-planes are fixed upon a rotating disk or platform, the block being held stationary.

189. SLIVERING, GANG-SAW. Machines for dividing match-cards, cutting wooden pins, etc., by means of a gang of saws, circular or reciprocating.

190. SLIVERING, PLUNGER AND FIXED-KNIFE. The cutting mechanism consists of a fixed knife or pair of knives over which a sheet of veneer is fed and a reciprocating plunger which severs the slivers by driving the veneer down upon the knives.

Search Class—

144—WOODWORKING, subclass 197, Punching-cutters, Fixed-die.

191. SLIVERING, RECEIVING AND HANDLING DEVICES. Chutes and other devices for attachment to slivering-machines to receive and in some instances to straighten and assemble the splints for packing.

Search Class—

144—WOODWORKING, subclasses 50, Match-making, and 61, Match-making, Box-filling.

192. SPLITTING AND BUNDLING. Machines which split blocks and also bind the split pieces into bundles.

193. SPLITTING. Machines for splitting blocks of wood whether operated by hand or other power.

Search Class—

144—WOODWORKING, subclass 182, Riving.

194. SPLITTING, SELF-FEEDING. Splitting-machines provided with various types of mechanism for feeding the blocks to the blades.

195. SPLITTING, SELF-FEEDING, ROLLER-AND-BELT. Splitting-machines having rollers and endless belts to feed the blocks to the splitting-blades.

196. PUNCHING-CUTTERS. Machines for cutting out pieces or simply cutting holes by mere punching action.

Search Classes—

144—WOODWORKING, subclasses 53, Match-making, Cutting, Framing and dipping, Die-punches; 55, Match-making, Cutting and framing, Die-punches.

164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 18, Cutting, Die, and 47, Cutting, Machines, Reciprocating-cutter.

197. PUNCHING-CUTTERS, FIXED-DIE. Punching-cutters in which the wood is forced down upon a fixed die.

Search Class—

144—WOODWORKING, subclasses 56, Match-making, Cutting and framing, Die-punches, fixed, and 190, Slivering, Plunger and Fixed-knife.

198. TENONING. Machines for making tenons at the end of a piece of wood.

Search Class—

144—WOODWORKING, subclasses 133, Gaining, and 6, Special-work machines, Combined, Blind and sash cutting, Relishing.

199. TENONING, BLIND-SLAT. Machines adapted to tenon blind-slats.

200. TENONING, BLIND-SLAT, ROTARY CUTTERS. Machines adapted to form tenons by some sort of rotary cutter.

201. TENONING, BLIND-SLAT, ROTARY GAINING-CUTTERS. Machines for forming tenons by a rotary gaining-cutter.

202. TENONING, CHISEL PAIR. Machines with oppositely-placed chisel-cutters which simultaneously cut both shoulders of the tenon.

203. TENONING, ROTARY GAINING-CUTTERS. Machines which are adapted to cut tenons by gaining.

Search Class—

143—WOOD-SAWING, subclass 38, Circular-saw machines, Angular.

204. TENONING, ROTARY GAINING-CUTTERS, MULTIPLE-TENON. Machines adapted to simultaneously gain two or more tenons.

205. TENON-TURNING. Machines adapted to make tenons by turning.

Search Class—

144—WOODWORKING, subclass 199, Tenoning, Blind-slat.

206. TENON-TURNING, WHEEL-SPOKE. Machines for turning spoke-tenons.

CLASS 144—Continued.

207. OSIER-PEELERS. Machines for removing the bark from withes or osiers by scraping or rubbing.

208. ROSSING BARK. Machines for cutting the bark from logs or slabs wholly or in part. Some leave the bark in sheets and others cut it up into small bits.

209. VENEER-LATHES. Machines for shaving veneers from the surface of a log which is centered between chucks and rotated against a knife.

210. VENEER-LATHES, CONVERTIBLE. Veneer-lathes whose stay-logs may be given a reciprocating or oscillatory instead of a rotary motion.

211. VENEER-LATHES, INCLINED KNIVES. Lathes in which the cutting-knives are set at an angle to the axis of the rotating log.

212. VENEER-LATHES, KNIVES AND KNIFE-BLOCKS. Knives of peculiar form and mechanism for supporting and shifting the knives while cutting the veneers.

213. VENEER-LATHES, PRESSER BARS AND ROLLS. Devices for gaging the thickness of the veneer cut from the log and for preventing the checking or splintering of the veneer under the action of the knife.

Search Class—

144—WOODWORKING, subclass 243, Feed and presser mechanisms, Presser bars and chip breakers.

214. VENEER-LATHES, STAY-LOGS. Means for supporting the log in the lathe.

215. VENEER-LATHES, STRIP-CUTTING ATTACHMENTS. Devices to be attached to the lathe for dividing the sheet of veneer into strips as it is severed from the log.

Note.—This does not include rollers with radial knives which score the log before the veneer is cut off. Such devices are classified as SLICERS, CYLINDER, RADIAL-KNIFE, subclass 174.

216. MITER-CUTTERS. Machines for cutting miters by means of a knife.

Note.—Mitering-machines in which the cut is made with a saw are classified under class 143, WOOD-SAWING, subclasses 6, Mitering-machines, and 86, Miter-boxes.

217. MITER-CUTTERS, ANGLE-KNIFE. Machines for cutting miters by means of an angular knife which is forced against the material.

218. CUTTERS, ROTARY, MISCELLANEOUS. Cutter-heads for wood containing matter partly or wholly unclassified elsewhere.

Search Class—

29—METAL-WORKING, subclass 103, Cutters, Rotary.

219. CUTTERS, ROTARY, END-THRUST. Cutters to which pressure is applied in the direction of their axis of rotation and having cutting parts for their face. They frequently have also side-cutting edges, so that after boring their way in by end pressure they can then be moved sidewise to enlarge the cut. This class includes principally carving and routing cutters.

Search Classes—

144—WOODWORKING, subclass 69, Mortising, Auger-cutter.

29—METAL-WORKING, subclasses 103 et seq., Cutters, Rotary.

32—DENTISTRY, subclass 31, Tools, Burs.

220. CUTTERS, ROTARY, FRUSTO-CONICAL. Cutter-heads in the form of cones generally used for cutting a dovetail in the edge of a board.

221. CUTTERS, ROTARY, CYLINDRICAL, SPIRAL-BIT. A cutter formed by twisting a long blade spirally, with or without a core-piece.

222. CUTTERS, ROTARY, SAW, DOUBLE, INTERMEDIATE-CUTTER. Two or more saws spaced apart on their arbor and having the intermediate space filled by a cutter which removes the material between the saw-kerfs. In this class a disk with a saw-section secured at its edge is considered a saw.

223. CUTTERS, ROTARY, SAW, SINGLE, SIDE-CUTTER. A saw having at one or both sides a cutter which removes the material to make a wider cut than the thickness of the saw-blade. In this class a disk with a saw-section secured at its edge is considered a saw.

224. CUTTERS, ROTARY, POLYGONAL, T-SLOT BIT-CLAMP. A built-up cutter in which the bits are secured by clamps sliding in T-slots formed in the faces of a head of polygonal cross-section. A number of bits are frequently used to produce a pattern.

225. CUTTERS, ROTARY, POLYGONAL, PLANE BIT-SEAT. A built-up cutter in which bits are clamped upon the plane faces of a head of polygonal cross-section.

Search Class—

12—BOOT AND SHOE MAKING, subclass 91, Sole and heel edge trimmers, Rotary cutter-heads, and all subclasses thereunder.

226. CUTTERS, ROTARY, POLYGONAL, CONVEX BIT-SEAT. A built-up cutter in which the bits are curved and are secured on a convex face of a head having a polygonal cross-section.

CLASS 144—Continued.

227. CUTTERS, ROTARY, POLYGONAL, CONCAVE BIT-SEAT. A built-up cutter in which the bits are curved in transverse section and are secured in concave recesses formed in a head of polygonal cross-section.
228. CUTTERS, ROTARY, RADIAL ARMS, PLANE BIT-SEAT. A built-up cutter to which the bits are secured upon plane faces formed on radial arms of a head which is secured to an arbor.
229. CUTTERS, ROTARY, RADIAL ARMS, SLOTTED BIT-SEAT. A built-up cutter in which the bits are secured in slots cut in radial arms of a head which is secured to an arbor.
230. CUTTERS, ROTARY, CYLINDRICAL, SLOTTED-BIT SEAT. A built-up cutter formed by inserting blades into longitudinal slots in the periphery of a cylindrical head.
- Search Classes—**
 29—METAL-WORKING, subclass 105, Cutters, Rotary, Inserted-tooth.
 12—BOOT AND SHOE MAKING, subclass 94, Sole and heel edge trimmers, Rotary cutter-heads, Inserted cutters.
231. CUTTERS, ROTARY, DISK, MULTIPLE CLAMPING-DISKS, TANGENTIAL BIT. A built-up cutter in which the bits are clamped edgewise between two or more disks carried on a shaft and are placed in a tangential or chordal relation to the cylinder of rotation.
232. CUTTERS, ROTARY, DISK, MULTIPLE CLAMPING-DISKS, PIVOTED-BIT. A bit clamped between two disks in such a manner that it may be moved about an axis eccentric to that of the cutter-shaft for the purpose of adjusting its edge toward and from the cutter-axis.
- Search Class—**
 144—WOODWORKING, subclass 226, Cutters, Rotary, Polygonal, Convex bit-seat.
233. CUTTERS, ROTARY, DISK, MULTIPLE CLAMPING-DISKS, SHANK-BIT. A built-up cutter-head in which bits have shanks formed thereon and are clamped between disks which are strung on an arbor.
- Search Classes—**
 12—BOOT AND SHOE MAKING, subclass 94, Sole and heel edge trimmers, Rotary cutter-heads, Inserted cutters.
 29—METAL-WORKING, subclass 105, Cutters, Rotary, Inserted-tooth.
 144—WOODWORKING, subclass 232, Cutters, Rotary, Disk, Multiple clamping-disks, Pivoted-bit.
234. CUTTERS, ROTARY, DISK, ECCENTRIC SEGMENTAL-BIT. A built-up cutter in which an annular segmental bit is clamped between two disks, near the periphery thereof, or bolted in the same location on the side of a single disk.
- Search Class—**
 12—BOOT AND SHOE MAKING, subclass 94, Sole and heel edge trimmers, Rotary cutter-heads, Inserted cutters.
235. CUTTER, ROTARY, DISK, SIDE-ATTACHED BIT, EDGE-CUTTING. A built-up cutter in which bits having shanks are bolted on the side of a disk, extend beyond the periphery, and cut with their projecting ends.
- Search Class—**
 12—BOOT AND SHOE MAKING, subclass 94, Sole and heel edge trimmers, Rotary cutter-heads, Inserted cutters.
236. CUTTERS, ROTARY, DISK, MULTIPLE, PATTERN. A gang of toothed disks of various diameter strung on a shaft in close proximity to each other, so that their teeth will present an irregular longitudinal contour corresponding to a predetermined pattern.
237. CUTTERS, ROTARY, DISK, GANG. A gang of cutter-disks clamped on a shaft. Some are beveled and used to cut out beveled slats from a plank by operating first on one side and then on the other. Others are mere grooving-cutters.
238. CUTTERS, ROTARY, SAW, WABBLE. One or more saws secured on a shaft in such a manner that they lie in a plane which cuts the axis of the shaft at an angle other than a right angle. They are used for cutting grooves wider than the thickness of the saw-blade, and also for cutting dovetail notches.
- Search Class—**
 144—WOODWORKING, subclass 201, Tenoning, Rotary gaining-cutters.
239. CUTTERS, ROTARY, SAW, DISTORTED. Saws in which a portion of the periphery is twisted out of its original plane so that it stands at an angle thereto and in rotating cuts a groove of a width greater than the thickness of the saw-plate.
240. CUTTERS, ROTARY, SOLID. Single integral cutters, not including saws which are intended merely for severing. It does include saws for cutting beveled grooves.
- Search Classes—**
 12—BOOT AND SHOE MAKING, subclass 91, Sole and heel edge trimmers, Rotary cutter-heads.
 29—METAL-WORKING, subclass 103, Cutters, Rotary.
 144—WOODWORKING, subclasses 237, Cutters, Rotary, Disk, Gang, and 236, Cutters, Rotary, Disk, Multiple, Pattern.
241. CUTTERS, ROTARY, BITS. Bits or blades to be secured to a rotary head.
- Note.—Rotary bits for cutting excelsior are found in class 144, WOODWORKING, Slivering, Scoring-Plane, Rotary.

CLASS 144—Continued.

- FEED AND PRESSER MECHANISMS. Devices for moving work to cutters and for holding it against spring and vibration.
242. FEED AND PRESSER MECHANISMS, MISCELLANEOUS. All mechanisms for moving the work to the cutting-tools and for holding it to the machine-bed and not otherwise classifiable.
243. FEED AND PRESSER MECHANISMS, PRESSER-BARS AND CHIP-BREAKERS. Fixed bars which, like presser-rolls, hold down work while being acted on by the cutter. They also often are formed to extend under the cutter to prevent the wood from slivering into the uncut portion. For this reason this combined form can not be separated from those devices which break chips only.
244. FEED AND PRESSER MECHANISMS, PRESSER-BARS AND CHIP-BREAKERS, SECTIONAL. Presser-bars and chip-breakers divided transversely into several parts to allow lumber of irregular thickness or several pieces of varying thickness to pass under them.
245. FEED AND PRESSER MECHANISMS, BLANK-FEEDERS. Devices for successively feeding small similar detached work-pieces to woodworking-machines.
- Search Classes—**
 10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 171, Nail-plate, and the subclasses thereunder.
 18—PLASTICS, subclass 27, Molding devices, Casting, Candles.
 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 7, Soap-molding devices.
 29—METAL-WORKING, subclass 60, Combined machines, Stock and blank feeders, Magazine.
 86—ARMS, PROJECTILES, AND EXPLOSIVE CHARGES, MAKING, subclass 23, Ammunition loading, and the subclasses thereunder.
 101—PRINTING, subclasses 24, Branding stamps; 83, Marking-machines; and 84, Marking-machines, Rotary.
 107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 11, Molding apparatus, Rolling, Pills; 17, Molding apparatus, Presses, Tablet; and 18, Molding apparatus, Presses, Tablet, Stationary mold.
 112—SEWING MACHINES, subclass 32, Sewing on buttons.
 113—SHEET-METAL WARE, MAKING, subclass 2, Bottle-capping, Die, and the subclasses thereunder.
 142—WOOD-TURNING, subclass 20, Circular-section, Automatic spindle-lathes, Chute-feed.
 154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 24, Linoleum-making, Inlaid, Pattern-forming, From sheets.
 214—LOADING AND UNLOADING, subclass 6, Loading and unloading, Pilers.
 216—LABEL PASTING AND PAPER HANGING, subclasses 57, Machines, Storage magazine, Article support, Conveyor; 58, Machines, Storage magazine, Article support, Runway; and 59, Machines, Storage magazine, Article support, Rotary.
 218—BUTTON, EYELET, AND RIVET SETTING, subclass 12, Machines, Button, Button feeders.
 226—PACKAGING LIQUIDS, subclasses 5, Corking machines, Automatic feed, and 10, Filling machines, Barrel.
246. FEED AND PRESSER MECHANISMS, ROLLS, FEED, MISCELLANEOUS. Devices showing structure, arrangement, gear connections, etc., of positively-driven work-moving rolls.
247. FEED AND PRESSER MECHANISMS, ROLLS, FEED, SPRING-PRESSED. Feed-rolls held to their work by means of springs.
248. FEED AND PRESSER MECHANISMS, ROLLS, FEED, WEIGHTED. Feed-rolls pressed upon the work by weighted levers.
249. FEED AND PRESSER MECHANISMS, ROLLS, PRESSER. Rolls which serve only to hold the work from springing, lifting, or vibrating and which have no feeding action.
250. FEED AND PRESSER MECHANISMS, ROLLS, SECTIONAL. Feed or presser rolls made up of independently-yielding parts to accommodate work irregular in cross-section.
251. CUTTER-GUARDS. Guards for preventing injury to the workman from contact with the cutter of a machine.
- Search Class—**
 143—WOOD-SAWING, subclass 159, Saw-guards.
252. CUTTER-HOODS AND DUST-CONVEYERS. Devices for catching and confining the flying shavings, and dust from a cutting-machine and for conveying them away from the machine.
253. WORK-GUIDES. Devices for defining the path of work moving with relation to such device and the shaping-cutter.
254. WOOD-BENDING, BENDING AND DRYING. Wood-bending machines which include heating devices for drying the wood in its bent form.
255. WOOD-BENDING, BENDING-ROLLERS. Includes machines wherein a rotating roller forces the wood against a yielding or an unyielding roller, a belt, or a shoe to crimp the wood without securing it to a former.

CLASS 144—Continued.

256. **WOOD-BENDING, PRESSES.** Machines for bending wood to a desired form by compressing it between formers or dies. In the simpler machines one of the dies or formers is stationary and the other is carried by a plunger or a pivoted arm. In some instances the machine embodies an integral former and a cooperating sectional former. The parts of the sectional former are carried by pivoted arms and are moved by suitable mechanism for forcing the wood against the integral former. In other instances the machine embodies an integral convex former and a flexible former. This latter comprises a strap having its ends supported by pivoted arms or sliding blocks guided by mechanism to compress the wood between the flexible former and the convex former.

Note.—Flexible formers may be found in subclasses 263–266, Wood-bending, Former, Fixed, Strap, and the subclasses following which comprise a strap; also, in subclass 268, Wood-bending, Former, Pivotal, Coiling.

Search Classes—

- 93—PAPER MANUFACTURES, subclass 49, Box machines, Folding, and the subclasses thereunder.
113—SHEET-METAL WARE, MAKING, subclasses 33, Tube-making; 38, Die-shaping, and subclasses thereunder.
147—COOPERING, subclass 48, Basket-forming.
153—METAL-BENDING, subclass 21, Angular, Reciprocating bender, and subclasses thereunder.

257. **WOOD-BENDING, PRESSES, END COMPRESSORS.** Machines for compressing strips of wood endwise to buckle or bend it to the desired shape. Usually the wood to be bent is supported in a flexible holder.

258. **WOOD-BENDING, HOOP-GAGING.** Machines for stretching previously-formed hoops to a desired size by means of an expansible former.

259. **WOOD-BENDING, FORMER, FIXED.** Fixed formers about which the wood is bent and secured until set. The wood is usually bent around the former by hand.

Search Classes—

- 147—COOPERING, subclass 48, Basket-forming.
153—METAL-BENDING, subclasses 32, Curving or straightening, and 64, Coiling.

260. **WOOD-BENDING, FORMER, FIXED, COLLAPSIBLE.** Collapsible or knockdown formers about which the wood is bent and secured until set.

261. **WOOD-BENDING, FORMER, FIXED, END-THRUST.** Machines in which sticks of wood are thrust by endwise pressure into a former of the desired conformation and kept there until the wood has taken a permanent set.

262. **WOOD-BENDING, FORMER, FIXED, RADIAL ARM AND ROLLER.** Machines having a fixed former and concentrically-arranged lever carrying a roller which forces the wood into engagement with the former.

Search Class—

- 153—METAL-BENDING, subclasses 45, Curving or straightening, Pivoted bender, Sweep-arm, and 46, Curving or straightening, Pivoted bender, Sweep-arm, Stationary clamped work.

263. **WOOD-BENDING, FORMER, FIXED, STRAP-AND-WINDLASS.** Machines for bending wood about a fixed former. The machines comprise a windlass or equivalent device connected with the ends of a strap which is drawn against the wood and forces it against the former.

264. **WOOD-BENDING, FORMER, FIXED, STRAP-AND-LEVER.** Machines for bending wood about a fixed former. The wood is drawn to the former by a lever secured to a strap which passes over the wood and compresses it against the former.

265. **WOOD-BENDING, FORMER, FIXED, STRAP-AND-SCREW.** The wood is drawn to the former by means of a screw connected with the strap which compresses the wood against the former.

266. **WOOD-BENDING, FORMER, FIXED, STRAP.** The wood is held to the former by means of a strap which prevents the wood from splintering opposite the convexed portions of the former.

267. **WOOD-BENDING, FORMER, PIVOTAL.** The wood is secured at one end to a pivotal former which when rotated draws the wood therearound. This subclass also includes devices for bending wood which comprise a lever provided at one end with a former, to which one end of the wood to be bent is secured, and in which the former rests upon the wood and acts as the fulcrum as the lever is turned to draw the wood closely against the former.

Search Class—

- 153—METAL-BENDING, subclasses 40, Curving or straightening, Pivoted bender; Bender-attached work; 32, Curving or straightening, and 64, Coiling.

268. **WOOD-BENDING, FORMER, PIVOTAL, COILING.** Machines for bending wood which comprise a revolving former, to which one end of the wood to be bent is secured and which, as the former is rotated, draws the wood closely therearound. In some of these machines a flexible apron presses the wood firmly against the cylinder or former.

Search Class—

- 153—METAL-BENDING, subclass 40, Curving or straightening, Pivoted bender, Bender-attached work.

CLASS 144—Continued.

269. **WOOD-BENDING, CLAMPS.** Devices for securing wood in its bent form until it is dried and set.

270. **WOOD-BENDING, BENDS.** Includes portions of structural material where the invention lies in the methods of forming the bend and the construction of the same.

271. **WOOD-BENDING, STEAMING.** Steam chambers or reports especially designed for steaming wood to soften it preparatory to bending.

272. **WOOD-ORNAMENTING, EMBOSGING.** Machines for embossing designs upon wooden surfaces, usually by a die-roller and the application of heat. Coloring fluids are also frequently used.

Search Classes—

- 18—PLASTICS, subclasses 11, Molding devices, Rolling, Compound, and 13, Molding devices, Die-expressing, Compound.
154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 30, Yielding fabric making, Corrugating and indenting, and subclasses thereunder.
201—METAL-ORNAMENTING, subclass 5, Die-pressing, Roller and bed.

273. **WOOD-ORNAMENTING, EMBOSGING, DIE-ROLLERS.** Wood-embossing machines in which the invention lies in the construction of the die-roller.

274. **WOOD-ORNAMENTING, EMBOSGING, HEAT-APPLYING.** Wood-embossing machines which present novelty in the arrangements for applying heat in the operation of embossing.

275. **WOOD-ORNAMENTING, GRAINING.** Machines adapted to indent, cut, or otherwise mutilate the surface of the wood to imitate graining. Sometimes the indentations are filled with some colored substance.

276. **WOOD-ORNAMENTING, ARTICLES.** Wood having its surface ornamented by embossing and impressing in various ways.

277. **WOOD-ORNAMENTING, PROCESSES.** Processes or methods of ornamenting wood by embossing, etc.

278. **MACHINE-WORK CLAMPS.** Devices for securing work upon a moving bed or while operated upon by a traveling cutter.

279. **GLUE-APPLYING AND PRESSING APPARATUS.** Means for applying glue to various wood surfaces and for pressing such surfaces together.

Search Class—

- 144—WOODWORKING, subclasses 289, Clamps, and 281, Veneer presses.

280. **GLUE-APPLYING APPARATUS.** Apparatus for applying glue to wood surfaces for veneering, etc.

Search Class—

- 91—COATING, for general coating.

281. **VENEER-PRESSES.** Machines for pressing and retaining veneers in position while drying.

Search Class—

- 144—WOODWORKING, subclasses 289, Clamps, and 280, Glue-applying apparatus.

282. **VENEER-PRESSES, ROLLER.** Veneer presses in which rollers are run over the work.

283. **VENEER-PRESSES, MOLDING.** Those presses adapted to veneering molding.

Search Class—

- 144—WOODWORKING, subclass 289, Clamps.

284. **CORK AND BUNG PRESSES.** Apparatus for compressing the ends of corks or bungs to make them tapered, so as to be more readily inserted.

285. **WORK-BENCHES AND TOOL-CHESTS COMBINED.** Tool-chests modified to form work-benches; also, covers for school-desks adapted to be used as work-benches. The desk-covers are provided with receptacles for tools.

286. **WORK-BENCHES.** Work-benches for carpenters' use.
Note.—Adjustable supports for holding heavy structures are found in Work-holding stands in this class.

287. **WORK-BENCHES, ADJUSTABLE STOCK-REST.** Adjustable devices applied to the side of work-benches to support one end of a piece of stock, the other end of which is generally held in the ordinary bench-vise.

288. **WORK-HOLDING STANDS.** Devices for holding structures of some magnitude, as doors, blinds, wagon-wheels, caskets, etc., in position to be operated on. These devices are usually adjustable.

289. **CLAMPS.** Various clamps and clamping apparatus, not otherwise specifically classified, used in woodworking operations.

Search Class—

- 144—WOODWORKING, subclasses 307, Bench-dogs, Clamping; 280, Glue-applying apparatus; 278, Machine-work clamps; 281, Veneer-presses; 269, Wood-bending, Clamps; and 288, Work-holding stands.

CLASS 144—Continued.

290. CLAMPS, BENCH. Devices adapted to hold work against a work-bench while being operated upon.
291. CLAMPS, RECTANGULAR - FRAMEWORK. Clamping apparatus, not otherwise specifically classified, adapted for setting up and holding framework of a rectangular form.
292. CLAMPS, MITER, MULTIPLE - JOINT. Apparatus adapted to simultaneously set up and hold two or more miter-joints.
293. CLAMPS, MITER, SINGLE-JOINT. Apparatus adapted to clamp a single miter-joint. Many of these clamps are portable.
- Search Class—**
143—WOOD-SAWING, subclass 86, Miter-boxes, and subclasses thereunder.
294. CLAMPS, BOX-JOINT. Clamping apparatus for assembling or forcing together box-joints.
295. CLAMPS, END AND PARTITION. Clamping apparatus adapted to hold the end or partition blanks of a box or similar structure in position while the receptacle is being completed.
296. CLAMPS, DOOR-SUPPORTING. Clamps for holding a door or window-sash in an upright position, the door resting wholly or in part on the ground or other support independent of the clamps. Principally for the use of door-hangers.
297. CLAMPS, PORTABLE. Portable devices, not otherwise classified, having opposing jaws between which the work, usually in two or more parts, is clamped and held.
298. CLAMPS, PORTABLE, SHIP-PLANKING. Clamps to be used in bending and holding planking against the ribs of a ship.
299. CLAMPS, PORTABLE, EXTENSIBLE-BEAM. Each jaw of the clamp has a shank at right angles to itself which combines with the other shank to form the clamp-beam. By sliding these shanks past each other to a greater or less degree, the length of the beam is adjusted.

CLASS 144—Continued.

300. CLAMPS, PORTABLE, PARALLEL-SCREW. Clamping-jaws mounted on a pair of parallel-screw rods, each rod being journaled in one jaw and engaging a nut in the other.
301. CLAMPS, PORTABLE, PARALLEL-SCREW, QUICK-ACTION. Parallel-screw clamps which by means of a screw-releasing mechanism can be approximately adjusted without rotation of the threaded rods.
302. CLAMPS, PORTABLE, PIVOTED-LEVER. Clamping-jaws pivoted to each other or one or both are pivoted to the common beam.
303. CLAMPS, PORTABLE, STRAIGHT-BEAM ADJUSTABLE-JAW. The clamp-beam is a straight bar along which one or both of the clamping-jaws can be adjusted.
304. CLAMPS, PORTABLE, U-BEAM. The clamp-beam is a U-shaped metallic yoke. The clamping is done between the prongs of the U-beam.
305. CLAMPS, PORTABLE, U-BEAM, QUICK-ACTION. U-beam clamps provided with two adjustments of the clamping-jaws, one more rapid than the other.
306. BENCH-DOGS. Stops set in work-benches to oppose the endwise movement in one direction of the board or other article which is being operated upon.
307. BENCH-DOGS, CLAMPING. Bench-dogs adapted to hold the work which rests upon a work-bench between two opposing clamping-jaws, one of which is usually an ordinary bench-stop.
308. BENCH-DOGS, REMOVABLE. The bench-dog is a removable device provided with sharp spurs. It is set in the desired position and secured by driving the spurs into the bench.
309. PROCESSES. Processes or methods of working wood.

CLASS 145.—WOODWORKING-TOOLS.

DEFINITIONS.

Class.

This class includes hand-tools, not otherwise classified, peculiar to woodworking.

Subclasses.

1. MISCELLANEOUS. Wood working-tools not otherwise classifiable.

2. AXES. Tools consisting of a handle and a blade mounted transversely to it and cutting by impact. The class includes hatchets and adzes.

Note.—Bill-hooks are found in class 30, CUTLERY, subclass 11, Pruning implements.

3. AXES, DETACHABLE-BIT. Axes the heads of which are made up of sections, so that the cutting part may be detached for sharpening, replacement, or the like.

4. AXES, GAGE ATTACHMENTS. Gage attachments for shingling-hatchets.

5. BENCH-PLANES, MISCELLANEOUS. Bench-planes not otherwise classified.

6. BENCH-PLANES, CHAMFERING. Bench-planes peculiarly modified to cut chamfers.

7. BENCH-PLANES, CORE-BOX. Planes cutting grooves or channels of segmental cross-section in blocks by tilting the knife from side to side.

8. BENCH-PLANES, STRIP-CUTTERS. Bench-planes to cut shavings of considerable thickness, such as blind-slats, splints, etc.

Note.—Machines for this purpose are classified in class 144, WOODWORKING, subclass 162, Slicers.

9. BENCH-PLANES, FLEXIBLE-FACE. Bench-planes provided with a flexible face and mechanism for bending the face to the desired curvature.

10. BENCH-PLANES, IRREGULAR-WORK. Bench-planes, not otherwise classified, adapted from the shape of their cutters-faces, gages, etc., to finish surfaces other than plane.

11. BENCH-PLANES, BIT ADJUSTMENTS. Bench-planes, not otherwise classified, provided with mechanism for adjusting the plane-bit with respect to the plane-stock. Planes in which the adjustment is made by unclamping the bit and resetting it are not included.

Search Class—

144—WOODWORKING, subclass 132, Planers, Stationary cutter, Bit adjustments.

12. BENCH-PLANES, BIT ADJUSTMENTS, ANGULAR. Bench planes having a plane-bit adjustable angularly about its cutting edge as an axis.

13. BENCH-PLANES, BIT ADJUSTMENTS, LONGITUDINAL, PIVOTED-LEVER AND SCREW. The plane-bit is adjusted longitudinally by means of a pivoted lever, one end of which engages the bit, while the other is operated by a screw.

14. BENCH-PLANES, BIT ADJUSTMENTS, LONGITUDINAL, SCREW. The plane-bit is adjusted longitudinally by the direct action of a screw or nut engaging the plane-iron.

15. BENCH-PLANES, ADJUSTABLE MOUTHPIECES. Bench-planes provided with an adjustable part to regulate the size of the shavings-channel.

16. BENCH-PLANES, BIT-CLAMPS. Mechanism for clamping the plane-bit to the stock.

Search Class—

145—WOODWORKING-TOOLS, subclass 12, *et seq.*, Bench-planes, Bit adjustments.

17. BENCH-PLANES, BITS. Bench-plane cutting-blades and mechanism for connecting the cutting-blade and the cap-piece which cooperates with it to make the plane-bit.

18. BENCH-PLANES, LUBRICATING ATTACHMENTS. Bench-plane attachments for lubricating the surface which is being operated upon.

19. BENCH-PLANES, HANDLE ATTACHMENTS. Handles and fastening mechanism for them peculiar to bench-planes.

20. BENCH-PLANES, GAGE ATTACHMENTS. Gages to be applied to bench-planes.

Search Classes—

145, WOODWORKING-TOOLS, subclasses 6, Bench-planes, Chamfering; 10, Bench-planes, Irregular-work.

147, COOPERING, subclass 24, Crozing and Chamfering barrels, Hand-crozes.

CLASS 145—Continued.

21. BOX-OPENERS. Devices designed for prying off box-lids, sometimes combined with nail-extractors.

22. CANT-DOGS. Devices for handling logs and heavy timbers, consisting of a lever and a hook pivoted thereto.

23. CHALK-LINE HOLDERS AND CHALKERS. Reels, spools, chalk-holders, and combined reels and chalk-holders for chalk-lines.

24. CHISELS. Hand and machine mortising chisels.

25. CHISELS, COMPOUND. Chisels the bits of which are formed of several parts clamped together.

26. CHISELS, GAGE. Depth and surface gage attachments for chisels.

27. CUE-TRIMMERS. Devices for trimming the ends of billiard-cues.

28. DRAWING-KNIVES. Cutting-blades provided with handles at each end. Many of the handles are angularly adjustable and are adapted to fold up on the blade as a guard when not in use.

29. HAMMERS. Tools designed primarily to be used as hand striking-tools.

Note.—Claw-hammers in which the novelty resides in the nail-pulling attachment are not treated as compound tools, but are placed in the appropriate subclass under 37, Nail-extractors, in class 145, WOODWORKING-TOOLS.

30. HAMMERS, NAIL-PLACERS. Devices formed in or secured on hammers or hatchets for holding a nail in position so that a blow of the hammer will set it.

31. HANDSAWS. General structure of handsaws.

Note.—Inventions in the cutting-teeth are in class 143, WOODSAWING.

32. HANDSAWS, TRUSS-FRAME. The saw-blade is mounted in the ordinary bucksaw truss-frame having an intermediate stiffening-brace.

33. HANDSAWS, U-FRAME. The saw-blade is mounted in a U-shaped frame.

34. HANDSAWS, U-FRAME, EXTENSIBLE. The part of the U-frame which is parallel to the saw-blade can be varied in length.

35. HANDSAWS, ATTACHMENTS. Attachments for handsaws, such as gages, lubricators, dust-blowers, and the like.

36. MALLET. Striking-tools the impacting faces of which are made out of soft metal, rawhide, wood, or other soft material.

37. NAIL-EXTRACTORS, MISCELLANEOUS. Nail-extractors not otherwise classified.

38. NAIL-EXTRACTORS, PIVOTED GRAPPLE-BAR. The nail-engaging grapple or claw is pivoted to the lifting-lever.

39. NAIL-EXTRACTORS, HOLDING-HOOK. The lifting-claw is held in contact with the nail by a pivoted hook engaging either with the nail or with some fixed support.

40. NAIL-EXTRACTORS, HAMMER AND ANVIL. Nail-extractors provided with a hammer for forcing the claw or nipper into engagement with the nail to be operated upon.

41. NAIL-EXTRACTORS, NUT AND SCREW LIFTERS. Nail-extractors and a few analogous devices, such as horseshoe-calk pullers and devices for removing teeth from coal-breaking cylinders, in which the lifting force is applied through a nut and threaded lifting-bar.

42. NAIL-EXTRACTORS, NIPPER, WEDGE-OPERATED. The nail is grasped by a pair of nipping-jaws, which are forced together by a wedge or cam action.

43. NAIL-EXTRACTORS, NIPPER, LEVER-OPERATED. The nail is grasped by a pair of nipping-jaws which are lever-operated. One jaw of the nipper is ordinarily a prolongation of the lever.

Search Class—

145—WOODWORKING-TOOLS, subclass 40, Nail-Extractors, Hammer and anvil.

44. NAIL-EXTRACTORS, CLAW-BAR. Nail-extractors consisting of a claw fixed to a lever.

45. NAIL-EXTRACTORS, CLAW-BAR, PIVOTED-FULCRUM. Claw bars provided with a fulcrum which is pivoted to the lever; also, some bars provided with extensible fulcrums.

Search Class—

145—WOODWORKING-TOOLS, subclass 38, Nail-extractors, Pivoted grapple-bar.

CLASS 145—Continued.

46. **NAIL-SETS.** Tools to be set against the head of a nail and struck by a hammer to set the nail-head below the surface of the work in which it has been driven.
47. **SCRAPERS.** Tools comprising a handle and a scraping-blade.
48. **SCRAPING-PLANES.** Scraping-blades set in a plane-like stock.
Search Class—
145—WOODWORKING-TOOLS, subclass 40, Drawing-shaves, single-handle.
49. **DRAWING-SHAVES, SINGLE-HANDLE.** Blades set in a stock provided with a single handle and adapted to cut by a drawing action.
Search Class—
12—BOOT AND SHOE MAKING, subclass 84, Peg-cutters.
50. **SCREW-DRIVERS.** Bits and gripping devices for driving wood-screws.
51. **SCREW-DRIVERS, SHELL-GUIDE, SPRING-OPERATED.** The screw is guided by a tubular shell which surrounds the bit and is normally held beyond it by a spring.
52. **SCREW-DRIVERS, HOLDING ATTACHMENTS, SIDE-GRIPPING JAWS.** The screw is held in contact with the driving-bit by one or more, generally two, side-gripping jaws.
53. **SPIRAL-TOOL DRIVERS.** The tool is rotated by the mutual interaction of a nut and coarse-pitched screw-thread.
Search Classes—
65—KITCHEN AND TABLE ARTICLES, subclasses 50, Stopper extractors, Screw, Rotary, and 49, Stopper extractors, Screw, Lever operated.
74—MACHINE ELEMENTS, subclass 40, Gearing, Screw and nut.
107—BREAD, PASTRY AND CONFECTION MAKING, subclass 39, Mixers, kneaders and beaters, Rotary dasher, single, Oscillating.
54. **SPIRAL-TOOL DRIVERS, FORWARD-PRESSURE, REVERSIBLE-ROTATION.** Spiral-tool drivers in which, without change of direction in the application of force, rotation in either direction may be secured.
55. **SPOKESHAVES.** A plane-bit set in a knife-stock, short in comparison with its breadth and provided with a handle at each side. The tool is used to dress spokes, fellies, etc.
56. **SPOKESHAVES, ADJUSTABLE MOUTHPIECES.** The opening in the stock through which the shavings pass can be altered by the adjustment of a movable mouthpiece or shoe.
57. **SPOKESHAVES, BEADING-BITS.** Spokeshaves provided with pattern-bits for cutting moldings. Many of the cutters are disks with various patterns around the periphery.
58. **SPOKESHAVES, GAGE.** Gage attachments for spokeshaves.
Search Class—
145—WOODWORKING-TOOLS, subclass 57, Spokeshaves, Beading-bits.
59. **STAPLE-PULLERS.** Devices for pulling staples, particularly wire-fence staples.
60. **WEDGES.** Wedges for splitting wood, etc.
- 60.5. **BIT-FRAMES.** A plurality of bits are mounted in a frame and geared together. The bits are usually augers and are used to bore a gang of holes for mortising, being driven by an ordinary bit-stock.
61. **HANDLES.** Handles and attachments for handles to be used with woodworking-tools and such general handles as are shown to be capable of such use.
62. **HANDLES, MAGAZINE.** Handles chambered to form a receptacle or receptacles for several tools.
63. **HANDLES, MAGAZINE, REGISTERING CHAMBERS.** Several tools are held in a chambered holder mounted in the handle. This holder can be rotated to bring any of the tool-chambers in register with an opening or channel leading to the tool-socket.
64. **HANDLES, HOLLOW, RETRACTILE-TOOL.** Hollow handles into which the tool may be wholly or partly withdrawn when not in use.
65. **HANDLES, CROSS-BAR.** Bar-handles, usually spindle-shaped, mounted transversely to the bit, generally an auger-bit, which is to be driven.
Note.—Cross-bar handles provided with clamping-jaws are found in class 10, BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 143, Screw Threading, Tapping, Tap wrenches, and subclasses thereunder.
66. **BIT-STOCKS, MISCELLANEOUS.** Devices, not otherwise classified, for driving auger-bits, screw-drivers, and the like, comprising a stock in which the bit is mounted, a lever for producing rotation, and a knob or the like to which pressure can be applied. This subclass also contains some extension-shanks for bits.

CLASS 145—Continued.

67. **BIT-STOCKS, STRAIGHT, SIDE-DRIVING SHAFT.** The bit is in line with the straight stock, which is geared to and driven by a shaft set at an angle (usually ninety degrees) with the axis of the bit.
Note.—Similar structures in which the pressure-knob is replaced by a feed-screw are found in subclasses Drilling-machines, portable, and Ratchet-drills, in class 77, BORING AND DRILLING.
Search Class—
107—BREAD, PASTRY, AND CONFECTION MAKING, subclasses 37, Mixers, kneaders, and beaters, Rotary dasher, Multiple, Hand-supported, and 41, Mixers, kneaders, and beaters, Rotary dasher, Single, Hand-supported.
68. **BIT-STOCKS, U-CRANK ARM, SPEEDING-GEAR.** The bit is geared so that one revolution of the U-crank will produce more than one revolution of the bit.
69. **BIT-STOCKS, U-CRANK ARM, ANGULAR BIT-SHAFT.** The bit is out of alignment with the axis of rotation of the U-crank stock which drives it.
Search Class—
32—DENTISTRY, subclass 11, Hand-pieces, Angle attachments.
70. **BIT-STOCKS, RATCHET.** Bit-stocks, not otherwise classified, provided with ratchet mechanism for driving the bit.
Search Class—
77—BORING AND DRILLING, subclass 44, Ratchet-drills.
71. **BIT-STOCKS, RATCHET, STRAIGHT-CRANK ARM.** The bit-stock is spindle-shaped and carries a ratchet-wheel which is engaged by a pawl carried by a straight-lever arm at right angles to the bit-stock. The lever is sometimes pivoted to the stock and folded up beside it when not in use.
72. **BIT-STOCKS, RATCHET, PIVOTED PAWLS.** The pawl is pivoted and swings into and out of engagement with the ratchet-wheel.
73. **BIT-STOCKS, RATCHET, SLIDING PAWLS.** The pawl slides into and out of engagement with the ratchet-wheel.
74. **BIT-STOCKS, RATCHET, SLIDING PAWLS, CHANGEABLE-FACE.** The ratchet-engaging faces of a sliding pawl may be shifted with respect to the ratchet to rotate the bit in one direction or the other.
75. **HANDLES, RATCHET-AND-PAWL.** Spindle-handles driving a bit through a ratchet and pawl.
Search Class—
77—BORING AND DRILLING, subclass 44, Ratchet-drills.
76. **HANDLES, RATCHET-CLUTCH.** Spindle-handles driving a bit through a ratchet-clutch.
Search Class—
77—BORING AND DRILLING, subclass 44, Ratchet-drills.
77. **HANDLES, CROSS-BAR, RATCHET.** Cross-bar handles driving bits through ratchet mechanism.
78. **HANDLES, SHIELD ATTACHMENTS.** Metal shields applied to the handles of eyed striking-tools to prevent the handle from breaking next to the tool-head.
79. **HANDLES, FASTENINGS.** Devices, not otherwise classified, for fastening handles to woodworking-tools.
Search Class—
125—STONE-WORKING, subclasses 13, Millstone picks, and 19, Tools.
80. **HANDLES, FASTENINGS, END-CAP.** A cap extends beyond the edges of the tool-head eye and is secured to the end of the handle.
81. **HANDLES, FASTENINGS, WEDGE.** Wedges for use in retaining handles in eyed tool-heads and a few devices for removing such wedges.
82. **HANDLES, FASTENINGS, WEDGE, SCREW-EXPANDED.** The wedge is forced into the end of the split tool-handle by means of a screw or is itself expanded by the same means.
83. **HANDLES, SOCKET-FASTENINGS.** Miscellaneous fastenings for retaining tools in socket-handles.
Search Classes—
29—METAL-WORKING, subclass 141, Machine chucks and tool-sockets, Sockets.
81—TOOLS, subclasses 19, Vises, Round Work; 121, Wrenches, Rigid Jaws, Inclosed; 122, Wrenches, Rigid Jaws, Inclosed, Watch and Clock Keys; 123, Wrenches, Rigid Jaws, Inclosed, Watch and Clock Keys, Dust protectors; 124, Wrenches, Rigid jaws, Inclosed, Watch and clock keys, Safety.
125—STONE-WORKING, subclass 3, Rock drill-chucks.
84. **HANDLES, SOCKET-FASTENINGS, BEVEL-CLOSING.** Movable-jaw fastenings in which the relative movement of the holding-jaws and the handle-body or of the jaws and the jaw-actuating device, is along lines neither parallel nor perpendicular to the axis of the handle.
85. **HANDLES, SOCKET-FASTENINGS, BEVEL-CLOSING, AXIAL-SCREW.** Bevel-closing fastenings in which the jaws are drawn back into a beveled socket or are thrust forward into a conical cap or in converging grooves by an axially-moving screw working in a suitable nut.

CLASS 145—Continued.

86. HANDLES, SOCKET-FASTENINGS, BEVEL-CLOSING, AXIAL-SCREW, SPRING-RETRACTED JAWS. Devices similar to the preceding in which the jaws, when released by the actuating means are separated by a spring or by their own resilience. A similar line of double classification is drawn in the remaining bevel-closing subclasses and in cam-closing devices.
87. HANDLES, SOCKET-FASTENINGS, BEVEL-CLOSING, ROTATING-RING. Devices in which the jaws are actuated by an interiorly-threaded ring which rotates but is confined by stops, so as to have no longitudinal movement on the handle-body.
88. HANDLES, SOCKET-FASTENINGS, BEVEL-CLOSING, ROTATING-RING, SPRING-RETRACTED JAWS. Devices like the preceding in which springs are provided for opening the jaws.
89. HANDLES, SOCKET-FASTENINGS, BEVEL-CLOSING, SCREW-RING. Devices in which the jaws are given their converging movement by an interiorly-threaded ring laterally surrounding the handle and having a helical movement thereon.
90. HANDLES, SOCKET-FASTENINGS, BEVEL-CLOSING, SCREW-RING, SPRING-RETRACTED JAWS. Devices like the preceding, with spring means for opening the jaws.
91. HANDLES, SOCKET-FASTENINGS, BEVEL-CLOSING, SCREW-CONE. Devices in which exteriorly-beveled and screw-threaded jaws are forced together by a ring or cap having an interior conical thread engaging the jaw-thread.
92. HANDLES, SOCKET-FASTENINGS, BEVEL-CLOSING, SCREW-CAP. Sockets in which a cap, screw-threaded in part, forces an attached cone over the tips of beveled jaws or forces rearwardly-beveled jaws into a conical socket.
93. HANDLES, SOCKET-FASTENINGS, BEVEL-CLOSING, SCREW-CAP, SPRING-RETRACTED JAWS. Devices like the preceding, with spring means for opening the jaws.
94. HANDLES, SOCKET-FASTENINGS, BEVEL-CLOSING, SLIDING-RING. Devices in which the jaws are actuated or held closed by a ring sliding longitudinally on the wall of the socket.
95. HANDLES, SOCKET-FASTENINGS, BEVEL-CLOSING, SLIDING-RING, SPRING-RETRACTED JAWS. Devices like the preceding, with spring means for separating the jaws.
96. HANDLES, SOCKET-FASTENINGS, CAM-CLOSING. Devices in which the jaws are actuated or the tool-tang gripped by transversely-moving cams.
97. HANDLES, SOCKET-FASTENINGS, CAM-CLOSING, SPRING-RETRACTED JAWS. Devices like the preceding, with spring means for separating the jaws.
98. HANDLES, SOCKET-FASTENINGS, LEVER-CLOSING. Devices in which the tool is gripped by one or more pivoted clamping-levers actuated by various means.
99. HANDLES, SOCKET-FASTENINGS, TRANSVERSE-SCREW CLAMP. Devices in which the tool-tang is secured in the socket by turning a screw located at substantially right angles to the axis of the socket.
100. HANDLES, SOCKET-FASTENINGS, TRANSVERSE-SCREW CLAMP, INTEGRAL-SOCKET. Devices like the preceding in which the tool-tang is held by screw or clamp in a socket conforming approximately in size and shape to the outline of the tang.
101. HANDLES, SOCKET-FASTENINGS, TRANSVERSE-SCREW CLAMP, SPLIT-SOCKET. Devices in which the parts of a split socket having the general outline of the tang are closed upon that tang by a transverse screw.
102. HANDLES, SOCKET-FASTENINGS, SHOULDERED-TANG AND CAP. Devices in which a shouldered tool tang or shank is secured in the socket by a cap or fastening-piece having an aperture smaller than the shouldered portion of the tang or one which may be moved to such position as to secure the tool after the shouldered part has passed through the cap-aperture.
103. HANDLES, SOCKET-FASTENINGS, SHOULDERED-TANG AND SIDE-SOCKET. Devices in which a tool tang or shank provided with a lateral lug or enlargement is laterally movable into a corresponding recess in the handle-socket and then secured there by additional fastening means.
104. HANDLES, SOCKET-FASTENINGS, PIVOTED-LATCH. Devices in which a latch pivoted to the handle engages a notch formed in the tool-shank for that purpose. No gripping action is necessary, as in the preceding subclass.
105. HANDLES, SOCKET-FASTENINGS, SLIDING-LATCH. Devices in which a tool tang or shank provided with a recess is inserted in a socket having a sliding instead of a pivoted detent or latch which is laterally moved into and secured in the tang-recess.

CLASS 145—Continued.

106. HANDLES, SOCKET-FASTENINGS, THREADED-TANG. Devices in which a threaded tang is screwed into a nut secured in the handle.
Search Class—
145—WOODWORKING-TOOLS, subclass 112, Saw-handles, Spindle, Longitudinal-socket and tightening-bar.
107. HANDLES, SOCKET-FASTENINGS, FRICTION-GRIP. Devices in which the tool-tang is forced into the socket and is retained by the elasticity of the material forming the walls of the socket.
Search Class—
145—WOODWORKING-TOOLS, subclass 112, Saw-handles, Spindle, Longitudinal-socket and tightening-bar.
108. SAW-HANDLES, MISCELLANEOUS. Handles and handle-fastenings, not otherwise classified, for handsaws.
109. SAW-HANDLES, DOUBLE-GRIP. Saw-handles adapted to be grasped by both hands of the operator.
110. SAW-HANDLES, SPINDLE, SIDE-CLAMPING PLATES. A spindle-shaped handle attached to a saw-blade by means of plates secured to the handle and between which the saw-blade is clamped.
111. SAW-HANDLES, SPINDLE, TRANSVERSE-SOCKET AND TIGHTENING-BAR. A spindle-shaped handle secured to a saw-blade by a bar, one end of which is secured to the saw-blade, the other passing transversely through the handle or through a bracket attached to the handle.
112. SAW-HANDLES, SPINDLE, LONGITUDINAL-SOCKET AND TIGHTENING-BAR. Spindle-shaped handles provided with an axial socket, into which the tightening-bar is secured. Usually the tightening-bar is threaded and engages with a nut fixed in the handle.
113. SAW-HANDLES, SCROLL. The ordinary irregularly-shaped saw-handle having an opening through which the fingers of the operator are passed.
114. REAMERS. Rotating bits with side-cutting edges used in enlarging holes previously made.
Search Class—
77—BORING AND DRILLING, subclass 72, Reamers, and subclasses thereunder.
115. TENON-CUTTERS. Cutters for forming round tenons on spokes and the like, generally adapted to be mounted on a bit stock or spindle.
Search Class—
142—WOOD-TURNING, subclass 45, Circular section, clamped work, Hollow cutter-head, End-turning.
116. AUGERS, MISCELLANEOUS. Rotating bits, not otherwise specifically classified, designed to bore holes in wood.
Search Classes—
125—STONE-WORKING, subclass 10, Drills.
166—ARTESIAN AND OIL WELLS, subclass 12, Earth-augers, bits.
117. AUGERS, TWIST. The general structure of augers in which the chips are removed through spiral grooves cut in the bit-shank or by a spiral thread or ribbon which is wrapped about the shank of the bit or which itself forms the body of the bit.
Search Class—
77—BORING AND DRILLING, subclass 70, Drills, Twist.
118. AUGERS, POD. The bit is pod-shaped and cuts with its end and side edges.
Search Class—
166—ARTESIAN AND OIL WELLS, subclass 12, Earth-augers, bits.
119. AUGERS, TUBULAR. Lip-cutters are formed at the end of a tubular shell, through which the shavings pass.
120. AUGERS, TUBULAR, CORE-CUTTERS. A tubular shell is provided with cutting-teeth on its edge for cutting out a plug. It is sometimes provided with core-ejectors.
Search Class—
144—WOODWORKING, subclass 23, Special-work machines, Single or combined, Disk-cutting, Rotary tubular-cutter.
121. AUGERS, SWEEPS. Bits consisting of a centering-point, which may be an auger, and one or more cutting-arms parallel to it, which cut out annular disks or rings. The cutting-arms are generally adjustable to cut disks and rings of different diameters.
Search Class—
144—WOODWORKING, subclass 24, Special-work machines, Single or combined, Disk-cutting, Sweep-cutter.
122. AUGERS, SQUARE-HOLE CUTTERS. Auger-bits constrained by a pattern or surrounded by chisels or other cutters to adapt them to cut square holes.
Search Class—
144—WOODWORKING, subclass 78, Mortising, Hollow chisel and bit.
123. AUGERS, COUNTERSINKS. Bits especially adapted to form countersinks.
Search Class—
145—WOODWORKING-TOOLS, subclass 125, Augers, Secondary cutters.

CLASS 145—Continued.

124. AUGERS, EXPANDING, REVERSE-TAPER. The cutting lip or lips automatically expand as the bit penetrates to bore a hole which increases in diameter from the surface inward.

125. AUGERS, SECONDARY CUTTERS. The auger is provided with supplemental cutters which are integral or detachably connected to it and bores and counterbores or countersinks a hole at one operation.

Search Class—

77—BORING AND DRILLING, subclass 66, Drills, Combined, Drills and countersink.

CLASS 145—Continued.

126. AUGERS, DETACHABLE CUTTERS. Some of the cutting parts are detachable.

Search Classes—

145—WOODWORKING-TOOLS, subclasses 125, Augers, Secondary cutters, and 127, Augers, Adjustable cutting-lip.

125—STONE-WORKING, subclass 10, Drills.

127. AUGERS, ADJUSTABLE CUTTING-LIP. The cutting lip or lips, usually detachable, can be adjusted to bore holes of different diameters.

128. AUGERS, GAGE ATTACHMENTS. Attachments secured to augers to gage the depth of the hole bored.

CLASS 147.—COOPERING.

DEFINITIONS.

Class.

Includes machines which are used exclusively in the manufacture of wooden barrels, fruit-boxes, baskets, or crates. Coopering does not include machines for sawing, bending, or planing staves or machines for sawing, splitting, cutting, or coiling hoops, except such as separate the hoops from a scored rod by racking or abruptly bending the rod or which combine two or more operations in the production of hoops, as planing and bending or planing and lapping or pointing.

Note.—Machines for sawing staves are found in class 143, WOOD-SAWING. Machines for bending staves are found in class 144, WOODWORKING, under several subclasses of Wood-Bending. Machines for planing staves are found in class 144, WOODWORKING, Planers. Machines for splitting or cutting hoops are found in class 144, WOODWORKING, Riving, and in class 144, WOODWORKING, Wood-Bending, Former, Pivotal Colling.

Subclasses.

1. **BARREL-MAKING MACHINES.** Machines which perform some operation not specifically classified and those which do more than merely set up and truss a barrel. They usually croze, howel, and head the barrel and sometimes plane it off.
2. **SETTING-UP MACHINES.** Two circularly-grooved end plates into which the staves are fed until the grooves are filled. Most of them shape the barrel, and the staves are secured by truss-hoops.
3. **SETTING-UP FORMERS.** Frames within or around which the staves are arranged on end and then confined by truss-hoops.
4. **BARREL-COMPRESSING MACHINES.** Machines for compressing the staves of barrels to receive the truss-hoops.
5. **BARREL-COMPRESSING MACHINES, CONE.** Machines for compressing the staves of a barrel by means of conical formers forced upon the ends of the barrel. In some instances hoops are driven by the conical formers.
6. **HEADING-MACHINES.** Machines which place the heads in the barrel and in some instances form the barrel and insert the head.
7. **HOOP-DRIVERS, MISCELLANEOUS.** Machines or implements which force hoops upon barrels by mechanism not otherwise specifically classified.
8. **HOOP-DRIVERS, CAM-OPERATED.** Machines which force the hoops upon barrels by means of cam-gearing presses.
9. **HOOP-DRIVERS, HYDRAULIC AND STEAM.** Machines which comprise hydraulic or steam presses for forcing hoops upon the barrel.
10. **HOOP-DRIVERS, LEVER-OPERATED.** Machines which force hoops upon barrels by lever or crank gearing.
11. **HOOP-DRIVERS, SCREW-OPERATED.** Machines which force hoops upon barrels by screw-gearing presses.
12. **HOOP-DRIVERS, WEIGHT.** Machines in which the hoops are forced upon barrels by the impact of a falling weight.
13. **CROZING AND CHAMFERING BARRELS, CLAMPED BARREL, ROTARY CUTTER-HEAD.** The barrel is clamped in a nonrotating clamp, and a rotary cutter-head carried by a frame which rotates on an axis concentric with the axis of the barrel cuts the croze, howel, or chamfer.
14. **CROZING AND CHAMFERING BARRELS, ROTATING BARREL, EXPANSIBLE CUTTER-HEAD.** Machines in which the barrel is rotated on its axis and while rotating cutting-tools are projected radially from a fixed head to croze, howel, or chamfer the staves.
15. **CROZING AND CHAMFERING BARRELS, ROTATING BARREL, ROTARY CUTTER-HEAD.** Machines in which the staves of the rotating barrel are successively brought into engagement with a rotary cutter-head for cutting the croze, howel, or chamfer.
16. **CROZING AND CHAMFERING BARRELS, ROTATING BARREL, SLIDING TOOL.** Machines in which the cutter is carried upon a slide or rest and which is projected into the rotating barrel for cutting the croze, howel, or chamfer.

Search Class—

147—COOPERING, subclass 14, Crozing and chamfering barrels, Rotating barrel, Expansible cutter-head.

CLASS 147—Continued.

17. **CROZING AND CHAMFERING BARRELS, ROTATING BARREL, SWINGING TOOL.** Machines in which a tool carried by a swinging rest is brought into engagement with the staves of the barrel as it is rotated on its axis for cutting the croze, howel, or chamfer.
18. **CROZING STAVES, MISCELLANEOUS.** Machines which are designed for cutting the croze, howel, or chamfer of staves before the barrel is formed and which are not otherwise specifically classified.
19. **CROZING STAVES, ROTARY CUTTER, ENDLESS STAVE CARRIAGE.** Machines having an endless feeding device for feeding the staves against a rotary cutter journaled in fixed bearings.
20. **CROZING STAVES, ROTARY CUTTER, SLIDING STAVE CARRIAGE.** Machines in which the stave is carried upon a sliding support into engagement with a rotary cutter.
21. **CROZING STAVES, ROTARY CUTTER, SWINGING STAVE CARRIAGE.** Machines in which the stave is carried into engagement with a rotary cutter by means of a swinging stave-supporting frame.
22. **CROZING STAVES, ROTARY CUTTER, SWINGING.** Machines in which the crozing, howeling, or chamfering cutter is journaled in a swinging support.
23. **CROZING STAVES, SLIDING KNIFE.** Machines for crozing staves in which the stave is immovably supported and the croze, howel, or chamfer is cut by a knife carried in a reciprocating carrier.
24. **CROZING AND CHAMFERING BARRELS, HAND-CROZES.** Short curved planes constructed to cut the croze, chamfer, or howel in trussed barrels.
25. **JOINTING STAVES, MISCELLANEOUS.** Machines for beveling and tapering the adjoining edges of barrel-staves by jointing-machines not otherwise designated.
26. **JOINTING STAVES, INCLINED MOLDING-HEADS, VERTICALLY-MOVABLE BED.** Machines for beveling and tapering the adjoining edges of staves by mechanism which lowers and raises the work-carrying platform as it passes between inclined or tapered revolving cutters.
27. **JOINTING STAVES, ROTARY CUTTER, PATTERN-FEED.** Machines for beveling and tapering the adjoining edges of barrel-staves by means of rotary cutters mounted in movable bearings controlled by reciprocating patterns or rotating cams.
28. **JOINTING STAVES, CONVERGING SAWS.** Machines for beveling and tapering the adjoining edges of barrel-staves by means of saws placed at an inclination to each other.
29. **JOINTING STAVES, DISK CUTTER-HEAD.** Machines for beveling and tapering the adjoining edges of barrel-staves by means of large rotating disks provided with knives in their faces.
30. **JOINTING STAVES, SINGLE SAW, SLIDING CARRIAGE.** Machines for beveling and tapering the adjoining edges of barrel-staves in which the stock is supported by a movable carriage controlled in movement past a single saw by a guiding-track.
Note.—Stave-jointing machines in which the stock slides past a single saw and in contact with an adjustable guide are included in this subclass.
31. **JOINTING STAVES, SINGLE SAW, TILTING CARRIAGE.** Machines for beveling and tapering the adjoining edges of barrel-staves in which the stock is supported by a longitudinally-movable carriage capable of being tilted on trunnions which are located in the extended plane of the saw.
32. **JOINTING STAVES, SLICING-KNIFE.** Machines for beveling and tapering the adjoining edges of barrel-staves by means of a suitable guiding-support and a reciprocating slicing-knife.
Search Class—
144—WOODWORKING, subclass 162, Slicers.
33. **JOINTING STAVES, SLIDING PLANE.** Machines for beveling and tapering the adjoining edges of barrel-staves by means of reciprocating planes or shaving-tools which are made to follow the contour of a templet or pattern.
34. **JOINTING STAVES, TRAVELING SAW, CURVED GUIDE.** Machines for beveling and tapering the adjoining edges of barrel-staves by means of a saw journaled in a movable frame controlled in its movements by a curved guide. The stock is clamped to a stationary support while being operated upon.

CLASS 147—Continued.

35. **JOINTING STAVES, LONGITUDINAL CUTTER-CYLINDER.** Machines for beveling and tapering the adjacent edges of laterally-fed barrel-staves by knives placed longitudinally in the periphery of a rotating cylinder.
- 35.5. **SHAPING STAVES.** Machines for finishing staves with convex outer and concave inner surfaces; also, machines for reducing the thickness of staves between their ends, so that they may be more readily bent to give the proper bulge to the barrel.
36. **BARREL-HEAD MAKING, MISCELLANEOUS.** Machines for cutting out barrel-heads and shaping the edge thereof to fit the barrel-croze. A few of these machines also plane the heads or bore the joints for dowel-pins.
Note.—This subclass comprises machines for forming barrel-heads which are not otherwise specifically classified.
37. **BARREL-HEAD MAKING, FIXED CHUCK, ROTARY SCRIBING-TOOL.** Machines for holding barrel-head stock concentric with a knife or cutting-tool carried on a rotary arm.
Search Class—
144—WOODWORKING, subclass 150, Shaping Rotary-cutter, End-thrust.
38. **BARREL-HEAD MAKING, ROTARY SAW.** Machines in which the stock is carried by a rotary chuck into engagement with a rotary saw (plane or dished).
39. **BARREL-HEAD MAKING, ROTARY CHUCK, CHISEL-CUTTER.** Lathe-like machines exclusively adapted for forming barrel-heads.
40. **BARREL-HEAD MAKING, ROTARY CHUCK, DOUBLE MOLDING CUTTER.** Machines in which the stock is carried by a rotary chuck and is operated upon by rotating molding-cutters.
41. **BARREL-HEAD MAKING, HAND-SCRIBERS.** Cutting-tools comprising a radial arm carrying at one end a centering-pin and near its outer end a cutting-tool to be operated by hand.
42. **CHAMFERING-TOOLS.** Tools for chamfering the staves when set up in barrel form.

CLASS 147—Continued.

43. **HOOP-MACHINES, MISCELLANEOUS.** Machines which perform two or more consecutive operations peculiar to the production of hoops, as planing and bending, planing and lapping, or planing and pointing.
Note.—Machines for sawing and planing hoops are found in class 144, **WOODWORKING,** subclass 41, Combined machines, Shaping and dividing.
44. **HOOP-MACHINES, RACKING.** Machines in which bars of wood, checked or split at one end, are separated into hoops by abruptly bending the bars progressively from the checked ends toward the opposite ends.
45. **HOOP-MACHINES, LAPPING AND POINTING.** Machines which cut the bevels and point the ends of hoops.
Search Classes—
147—COOPERING, subclass 46, Hoop-machines, Lock-cutting, and **144, WOODWORKING,** subclass 147, Shaping, Reciprocating-knife.
46. **HOOP-MACHINES, LOCK-CUTTING.** Machines which cut the notches near the ends of hoops, whereby the ends may be interlocked.
Search Classes—
147—COOPERING, subclass 45, Hoop-machines, Lapping and pointing; **144, WOODWORKING,** subclasses 75, Mortising, Chisel, and 147, Shaping, Reciprocating-knife.
47. **BASKET FORMING AND NAILING.** Forms, male and female, for shaping baskets, fruit-boxes and crates, including nailing or stapling mechanisms.
Search Class—
1—NAILING AND STAPLING, subclasses 1, Machines, Nail-driving, and 14, Machines, Box, Assembling and Nailing.
48. **BASKET-FORMING.** Forms, male and female, for shaping baskets. Formers for shaping fruit-boxes and crates are also included.
49. **TRUSS-HOOPS.** Temporary hoops forced upon the barrel to secure the staves in barrel form until they become permanently bent and seasoned or dried.

CLASS 150.—CLOTH, LEATHER, AND RUBBER RECEPTACLES.

DEFINITIONS.

Class.

This is the generic class of receptacles and cases made of cloth, leather, or rubber; but these materials do not exclusively define the limits of the class, as receptacles made of other materials are included, when they are of the type of those commonly made of cloth, leather, or rubber.

Subclasses.

BAGS. Includes general bag structures of cloth, leather, rubber, or equivalent materials, the structure of the body portion being wholly flexible and not being supported on any rigid framework or braces, except in subclass 2, Bags, Harvesting, in which some frame structures are included as being designed specially for harvesting purposes.

Note.—Structures of cloth, leather, or rubber sustained on a rigid frame or provided with rigid end pieces are classified under the subclass titles of 48, Baskets and buckets, and 52, Covers and cases.

1. **BAGS, BODY CONSTRUCTION.** The construction of the bag and all patents for bags not otherwise classifiable.

2. **BAGS, HARVESTING.** Bags of special construction for holding and delivering fruit or material picked. Includes also special constructions for attaching such bags to the person of the operator.

Search Class—

150—CLOTH, LEATHER, AND RUBBER RECEPTACLES, subclasses 49, Baskets and buckets, Folding-frame, and 51, Baskets and buckets, Rigid-frame.

119—ANIMAL HUSBANDRY, subclass 65, Feeding devices, Feed bags, and the subclasses thereunder.

224—PACKAGE AND ARTICLE CARRIERS, subclasses 5, Body and belt attached; 8, Body and belt attached, Knapsack; 26, Body and belt attached, Bag, case, or frame, and 27, Body and belt attached, Bag, case, or frame, Chatelaine.

3. **BAGS, CLOSURES.** Bag-closures not classifiable in the other subclasses of bag-closures. A closure in this connection is distinguished from a fastener by the fact that a closure presents a particular modification of the bag structure, while a fastener comprises the means for holding the bag closed and is not necessarily a part of the bag.

4. **BAGS, CLOSURES, PIVOTED JAWS.** Constructions in which the bag-mouth is secured to two arched frames pivoted together at their ends.

5. **BAGS, CLOSURES, PARALLEL BARS.** Bag-closures in which two bars or strips are secured one to each half of the bag-mouth, the bag being closed by bringing the bars together side by side.

6. **BAGS, CLOSURES, FOLDING BAR AND CLAMP.** The closure comprises a bar over which the end of the bag is folded and a clamp provided to hold the folded portion of the bag down on the bar.

Search Class—

229—PAPER RECEPTACLES, subclasses 65, Bags, Closures, Metallic, and 78, Envelops, Closures, Fasteners, Metallic.

7. **BAGS, CLOSURES, FOLDING-FLAP.** One or more sides of the bag-mouth are extended to form a flap, which is folded down over or in the mouth edge of the other side or sides.

Search Class—

150—CLOTH, LEATHER, AND RUBBER RECEPTACLES, subclasses 21, Mail-bags, Closures, Folding-flap, and 22, Mail-bags, Closures, Folding-flap, Corner-fold.

8. **BAGS, CLOSURES, MOUTHPIECE, CAP, OR STOPPER.** Bag-closures in which the bag-mouth is closed by a separate part secured in the bag-mouth. Such part may comprise a collapsible tube or a rigid tube-neck provided with closing means.

9. **BAGS, CLOSURES, SEAM-VALVE.** Bag construction in which a small opening is left in the bag-seam, the seam edges of the bag being of some length adjacent the opening and infolded into the bag, so as to overlap the opening, the pressure of the contained material holding the seam-flaps shut.

10. **BAGS, CLOSURES, EXPANDING-SPRING.** Bag constructions in which the bag is closed by the expansion of a spring, the spring being generally secured with its ends in the corners of the bag-mouth.

Search Class—

2—APPAREL, subclass 15, Nether garments, Pockets.

11. **BAGS, CLOSURES, SHIRING-CORDS.** Bag constructions in which one or more shirring cords or tapes are secured to the bag adjacent its mouth, which cords when drawn cause the bag-mouth to close. Some patents are included which claim grips engaging the cords or tapes to prevent loosening of the same, but only when such grips form part of the bag combination claimed.

CLASS 150.—Continued.

12. **BAGS, HANDLES.** Construction and arrangement of handles for bags.

MAIL-BAGS. The construction of bags to adapt the same for the purpose of containing mail-matter and generally all constructions of the bag providing extra security for its contents which are applicable for the purpose of containing mail; also the construction of the bag proper, the construction or arrangement of the bag to provide for the secure closing of the same, and any particular form of fastening as locking means especially adapted to the mail-containing feature of the bag.

13. **MAIL-BAGS, CONSTRUCTION.** The construction of the bag proper, also detail parts and all constructions classifiable in this class under the main class definition and which do not more properly belong in any of the other subclasses.

14. **MAIL-BAGS, MULTIPLE POCKETS.** Mail-bags provided with multiple pockets to receive assorted mail. This construction of bag is particularly employed for rural-mail-delivery service, and constructions specially designed for such service, providing a plurality of compartments for holding the mail in separated pockets for delivery, are placed in this subclass.

Search Class—

224—PACKAGE AND ARTICLE CARRIERS, subclasses 5, Body and belt attached; 7, Body and belt attached, Game, and 8, Body and belt attached, Knapsack.

15. **MAIL-BAGS, CLOSURES.** Closures which are special to mail-bags and which are not classifiable in any of the other subclasses of closures.

16. **MAIL-BAGS, CLOSURES, PIVOTED JAWS.** The open end of the bag is formed of two side extensions which are secured to arched metal frames similar to the ordinary U-frame of pocket-book construction, the frames being pivoted together at their ends and provided with locking means for holding them closed.

Search Classes—

150—CLOTH, LEATHER, AND RUBBER RECEPTACLES, subclass 29, Portemonnaies and pocket-books, Body construction, U-frame.

190—BAGGAGE, subclass 49, Traveling-bags, Frames.

17. **MAIL-BAGS, CLOSURES, COLLAPSIBLE-FRAME.** The bag-mouth is secured to a frame comprising a plurality of bars, more than four, pivoted together at their ends in such manner that the bars may be folded together to close the bag-mouth or opened to form a rectangular or polygonal frame for the open bag-mouth.

18. **MAIL-BAGS, CLOSURES, COLLAPSIBLE-FRAME, QUADRANGULAR.** The mouth of the bag is secured to a frame comprising four bars pivoted together at their ends in such manner that the bars may be folded together to close the bag or opened to form a rectangular frame for the bag-mouth.

19. **MAIL-BAGS, CLOSURES, COLLAPSIBLE-FRAME, FOLDING-FLAP.** The bag-mouth is secured to a frame comprising bars pivoted together at their ends in such manner that they may be folded together to close the bag-mouth or opened to form a rectangular or polygonal frame for the open mouth and in which one part of the frame is provided with a pivoted flap or cap which folds over the closed frame.

20. **MAIL-BAGS, CLOSURES, MANIFOLD, LOCKING-TONGUE.** The bag-mouth is arranged to close in overlapping or superimposed folds, and a tongue is secured to the base fold and passed through slots cut in the other folds, the tongue being provided with locking means to prevent its withdrawal through the slots.

21. **MAIL-BAGS, CLOSURES, FOLDING-FLAP.** Constructions in which a lateral portion of the bag is extended beyond the other portions, such extension folding over upon the other portions and being provided with locking means for holding the bag closed.

22. **MAIL-BAGS, CLOSURES, FOLDING-FLAP, CORNER-FOLD.** The bag is arranged to be closed by infolding or folding over the end corners. Commonly also the apex of the triangle so formed is folded over the folded corner portions.

23. **MAIL-BAGS, FASTENERS.** Fasteners for mail-bags not classifiable in any of the other subclasses of fasteners.

24. **MAIL-BAGS, FASTENERS, TONGUE AND STAPLE.** Fastenings for mail-bags comprising a bar secured to permit a sliding movement of the same on one lateral portion of the bag and provided with tongues or hooks which engage staples secured to the other portion of the bag. The term "bar" includes a strap or linked plates.

25. **MAIL-BAGS, FASTENERS, STUD AND KEYHOLE SLOT.** Fasteners for mail-bags comprising headed studs secured to a portion of the bag, which engage in keyhole-shaped slots formed in a part secured to the other portion of the bag,

CLASS 150—Continued.

and a sliding bar or strap which controls the position of the stud relative to the slot, so as to lock or unlock the stud in such slot. Generally the slot is formed in the bar or strap.

26. **MAIL-BAGS, FASTENERS, PIVOTED CATCHES, SLIDING-BAR.** Fasteners for mail-bags comprising a bar or strap slidably secured to one portion of the bag and connected to operate pivoted catches which engage with coacting devices on the other portion of the bag-mouth.
27. **MAIL-BAGS, FASTENERS, TURN-BOLT WITH CATCHES.** Fastenings for mail-bags comprising a bolt or shaft rotatably mounted in one portion of the bag and provided with or connected to catches which engage coacting devices on the other portion of the bag-mouth, the catches being thrown into or out of engagement with the coacting devices by the rotation of the bolt.

PORTEMONNAIES AND POCKET-BOOKS. Includes constructions of cloth, leather, rubber, paper, and equivalent materials intended as receptacles for personal use, adapted for holding money, either coin or paper, also analogous receptacles, such as card and ticket cases, stamp-books, etc. Includes also such receptacles as bankers' note-books and bill and memorandum cases in which the novelty resides in the construction or arrangement of the gussets or partitions or any stay or brace construction applicable to pocket-books or portemonnaies.

28. **PORTEMONNAIES AND POCKET-BOOKS, BODY CONSTRUCTION.** Constructions of pocket-books and similar receptacles not classifiable in any of the following subclasses.

29. **PORTEMONNAIES AND POCKET-BOOKS, BODY CONSTRUCTION, U-FRAME.** Constructions in which the invention relates to the U-shaped frames employed in pocket-book construction. The construction and arrangement of the frames, the means for securing such frames to the flexible parts of the pocket-book, and all attachments and connections special to such frames in pocket-book construction.

Search Classes—

- 150—CLOTH, LEATHER AND RUBBER RECEPTACLES, subclasses 16, Mail-bags, Closures, Pivoted jaws, and 46, Portemonnaies and pocket-books, Closures, Hinged-lid.
70—LOCKS AND LATCHES, subclass 116, Bag-fasteners.
190—BAGGAGE, subclass 49, Traveling-bags, Frames.

30. **PORTEMONNAIES AND POCKET-BOOKS, BODY CONSTRUCTION, GUSSETS AND PARTITIONS.** Pocket-book construction in which the novelty resides in the construction or arrangement of the gussets and partitions or in the means for attaching the same to the purse or pocket-book.

31. **PORTEMONNAIES AND POCKET-BOOKS, BODY CONSTRUCTION, STAYS AND BRACES.** Stay and brace constructions applied to pocket-books and similar receptacles.
Note.—If the stay is applied to the gussets or partitions, the patent is classified in subclass 30, Portemonnaies and pocket-books, Body-construction, Gussets and partitions.

Search Class—

- 190—BAGGAGE, subclass 50, Traveling-bags, Frames, Stays.

32. **PORTEMONNAIES AND POCKET-BOOKS, BODY CONSTRUCTION, BLANKS.** The construction, particularly the folding, of the blank or body portion of the purse or pocket-book.

33. **PORTEMONNAIES AND POCKET-BOOKS, BODY CONSTRUCTION, HANDLES.** Handle construction for portemonnaies and pocket-books.

Search Classes—

- 190—BAGGAGE, subclass 57, Traveling-bags, Handles.
224—PACKAGE AND ARTICLE CARRIERS, subclass 45, Hand, and the subclasses thereunder.

34. **PORTEMONNAIES AND POCKET-BOOKS, ARTICLE-HOLDING.** Constructions of and attachments for pocket-books and portemonnaies to provide means for holding small articles, commonly toilet articles or stamps, in the book.

35. **PORTEMONNAIES AND POCKET-BOOKS, COMBINATION.** Combinations of a portemonnaie or a pocket-book with other structures. Also the combination of a portemonnaie and a card-case attached to fold together and hold a handkerchief, gloves, etc.

Note.—Does not include the construction of the pocket-book with clasps or retaining devices for holding toilet articles, stamps, etc., as such constructions are to be found in this class, subclass 34, Portemonnaies and pocket-books, Article-holding.

36. **PORTEMONNAIES AND POCKET-BOOKS, PUZZLE AND SECRET COMPARTMENT.** Construction providing a secret compartment or involving a puzzle as to the means for opening or closing the purse or portemonnaie.

37. **PORTEMONNAIES AND POCKET-BOOKS, COIN-HOLDING.** Pocket-book and purse construction in which the novelty resides in the construction, arrangement, or adaptation of parts to provide coin receiving, delivering, or containing features.

Search Classes—

- 150—CLOTH, LEATHER AND RUBBER RECEPTACLES, subclass 44, Portemonnaies and pocket-books, Closures, Collapsible walls, as such construction of closure is commonly applied to purses intended for the reception of coin only.
133—COIN-HANDLING.

CLASS 150—Continued.

38. **PORTEMONNAIES AND POCKET-BOOKS, BILL-HOLDING.** Pocket-book construction in which the novelty resides in the construction, arrangement, or adaptation of parts to provide means for holding paper money. Commonly the construction is such as to present the bills unfolded when the book is opened, so that any individual bill may be readily accessible.

39. **PORTEMONNAIES AND POCKET-BOOKS, CARD AND TICKET CASES.** Constructions of cloth, leather, or rubber or equivalent material providing receptacles analogous to pocket-books for cards or tickets.

40. **PORTEMONNAIES AND POCKET-BOOKS, KEY POUCHES.** Constructions of cloth, leather, or rubber or like material specially arranged to contain keys.

41. **PORTEMONNAIES AND POCKET-BOOKS, STAMP-BOOKS.** Books or similar receptacles for postage-stamps and like gummed articles wherein the stamps are held between leaves or partitions so prepared that the stamps will not adhere to the same or to permit the stamps to be readily removed if adhering. Does not include constructions of metal or like materials providing boxes for holding stamps or like articles or arrangements of book-leaves to form stamp-albums for collectors' use.

42. **PORTEMONNAIES AND POCKET-BOOKS, CLOSURES.** Constructions providing for the closure of the purse or pocket-book.

43. **PORTEMONNAIES AND POCKET-BOOKS, CLOSURES, BAND OR STRAP.** The construction, arrangement, or attachment of the band or strap applied to a pocket-book or purse for holding the same closed.

44. **PORTEMONNAIES AND POCKET-BOOKS, CLOSURES, COLLAPSIBLE WALLS.** Pocket-book or purse construction in which the walls of the mouth portion of the purse are creased to fold inwardly and overlies each other.

45. **PORTEMONNAIES AND POCKET-BOOKS, CLOSURES, FOLDING-FRAME.** Pocket-book construction wherein the novelty resides in a folding frame of pivoted sections or parts which is secured to the mouth of the portemonnaie or purse and forms the means for closing the same.

Note.—Does not include pivoted jaws or U-frames, as such constructions are placed in another subclass.

Search Class—

- 150—CLOTH, LEATHER, AND RUBBER RECEPTACLES, subclasses 17, Mail-bags, Closures, Collapsible-frame, and 18, Mail-bags, Closures, Collapsible-frame, Quadrangular.

46. **PORTEMONNAIES AND POCKET-BOOKS, CLOSURES, HINGED-LID.** The construction or arrangement of or the means for attaching a hinged lid to the portemonnaie or purse as a means for closing the same.

47. **PORTEMONNAIES AND POCKET-BOOKS, SAFETY ATTACHMENTS.** Constructions providing means whereby the pocket-book or purse may be secured to the person, arm, or the pocket of the user to prevent loss of the same.

Search Class—

- 190—BAGGAGE, subclass 61, Traveling-bags, Safety-attachers.

48. **BASKETS AND BUCKETS.** Constructions of cloth, leather, rubber, or equivalent material formed into baskets or buckets or similar shapes. The term "bucket" in this class is employed broadly to cover shapes approaching also a barrel or tub. This subclass also includes structures similar to bags, but which are sustained on rigid frames or which are provided with rigid end pieces forming tops or bottoms of the structure.

49. **BASKETS AND BUCKETS, FOLDING-FRAME.** Structures comprising a flexible body portion of fabric sustained on a frame which may be folded or collapsed.

Search Classes—

- 4—BATHS AND CLOSETS, subclass 27, Bathing apparatus, Tubs.
21—CARRIAGES AND WAGONS, subclass 80, Ambulances and stretchers.
155—CHAIRS, subclass 32, Stools, Folding.
217—WOODEN RECEPTACLES, subclass 43, Boxes, Crates, Knock-down.

50. **BASKETS AND BUCKETS, RIGID-BOTTOM.** Structures commonly of bucket shape having the walls of flexible material attached to rigid bottom pieces. Commonly the bottom pieces are disks of wood or metal.

51. **BASKETS AND BUCKETS, RIGID-FRAME.** Structures comprising a flexible body portion of fabric sustained on a rigid framework.

Search Class—

- 217—WOODEN RECEPTACLES, subclass 49, Boxes, Crates, Cylindrical.

52. **COVERS AND CASES.** Constructions of cloth, leather, rubber, or equivalent material formed into cases or covers having the function of protection only.

Note.—Includes constructions for holding loose leaves and sheets of paper, etc.—such as maps, drawings, etc.—when the containing function predominates. If the case or cover is modified that it may be conveniently carried, the function of transportation predominating, it is classified in class 224, PACKAGE AND ARTICLE CARRIERS. If the construction is arranged to provide ready access to any particular contained paper or set of papers, so that the filing function is evidenced, it is classified in class 129, PAPER FILES AND BINDERS.

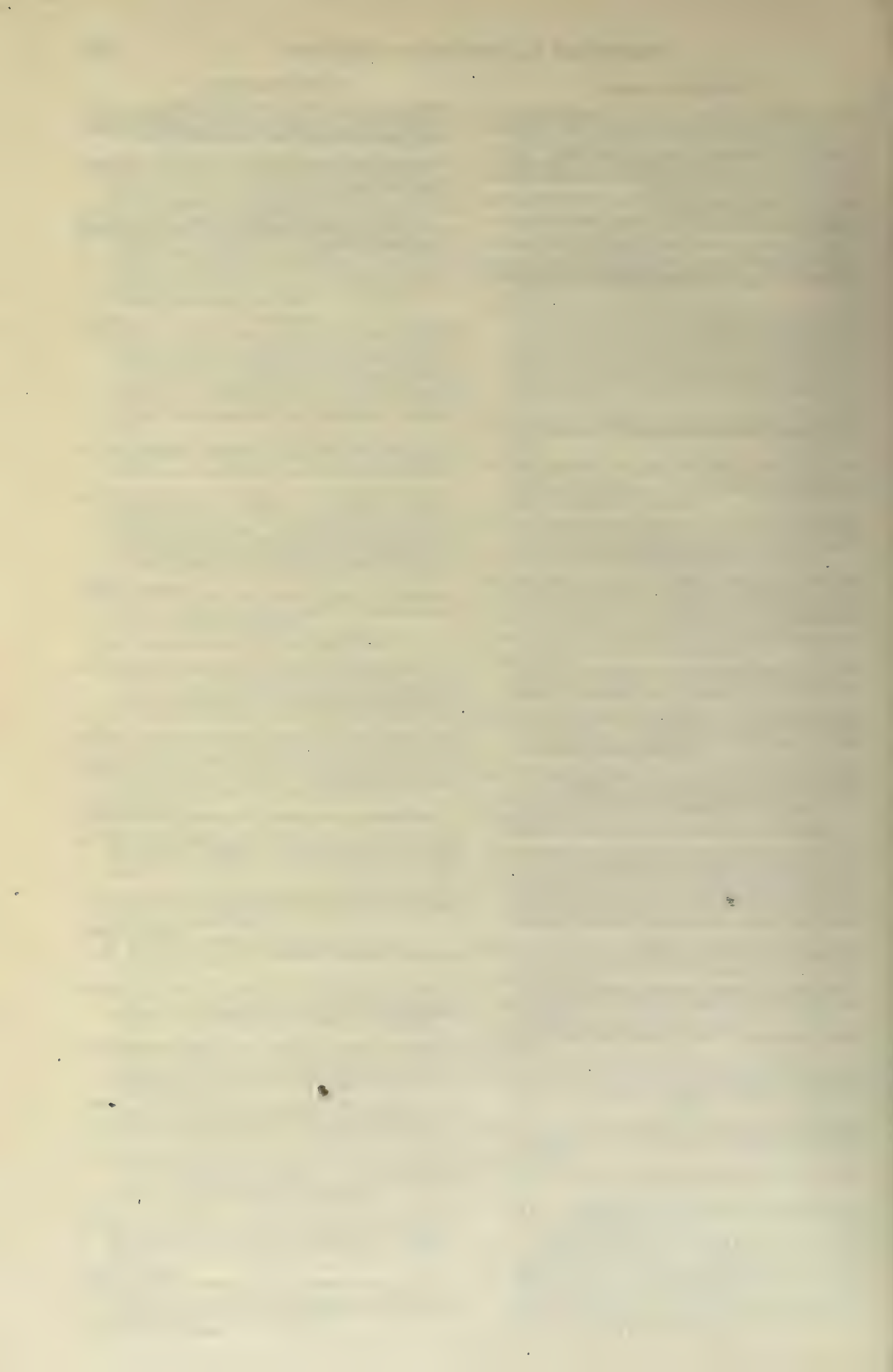
CLASS 150—Continued.

Search Classes—

- 11—BOOKBINDING, subclasses 3, Books and covers; 11, Writing-tablets; 18, Covers; 20, Leaves and covers, and, 35, Covers, Removable.
- 24—BUCKLES, BUTTONS, CLASPS, ETC., subclasses 16, Bale and package ties; 17, Bale and package ties, Packet-holders; 18, Bale and package ties, Packet-holders, Cord, and 19, Bale and package ties, Strap-tighteners.
- 45—FURNITURE, subclasses 64, Book and music holders, Portfolio, and 69, Desks, Portable.
- 120—STATIONERY, subclasses 23, Scholars' companions, and 24, Blotters.
- 129—PAPER FILES AND BINDERS, subclasses 1, Miscellaneous; 20, Scrap-book and album leaves, and 41, Transverse cords.
- 190—BAGGAGE, subclasses 43, Traveling-bags, Frameless and folding, and 51, Traveling-bags, Compartments and partitions.

CLASS 150—Continued.

- 224—PACKAGE AND ARTICLE CARRIERS, subclasses 8, Body and belt attached, Knapsack; 26, Body and belt attached, Bag, case, or frame; 43, Saddle-bags; 44, Saddle-bags, Traveling-bag, and 45, Hand, and the subclasses thereunder.
53. COVERS AND CASES, COLLAR AND CUFF. Constructions of flexible materials intended as receptacles for collars and cuffs and allied articles.
54. COVERS AND CASES, TIRE AND WIRE COIL. Coverings and cases of circular form, commonly also annular, to incase and protect automobile and other tires, coils of wire, and like structures.



CLASS 151.—NUT AND BOLT LOCKS.

DEFINITIONS.

Class.

This class includes all special means which prevent or tend to prevent the rotation of a threaded nut or bolt, their relative rotation, or their endwise movement or separation.

Subclasses.

1. **FLOWING METAL.** Includes fusible metal, which upon cooling locks the bolt or nut, and soft metal, some of whose parts by flowing or drawing lock the nut or bolt.
2. **COUPLED NUT AND BOLT.** The nut is locked to the bolt, so as to prevent their relative rotation or endwise separation.
3. **COUPLED NUT AND BOLT, FLEXIBLE WASHER.** A washer secured to the bolt has an inelastic portion turned against the nut after the nut is screwed on.

Search Class—

151—NUT AND BOLT LOCKS, subclass 53, Locked nut, Side-lock, Flexible, Inelastic washer-tongue.

4. **COUPLED NUT AND BOLT, FLEXIBLE-KEY.** The nut and bolt are held together by a key which is bent after the nut is seated so as to form a connection between notches or slots in the nut and the bolt.
5. **COUPLED NUT AND BOLT, CROSS-KEY.** The nut and bolt are locked together by a key which has its locking portion lying transversely of the bolt.
Note.—Keys which cut or bind against the threads of the nut or bolt are classified in the subclasses 24, Coupled nut and bolt, Thread-lock, Radial key or gib, and 26, Coupled nut and bolt, Thread-lock, Tangential-key, this class.
6. **COUPLED NUT AND BOLT, CROSS-KEY, SPRING-SEATED.** The key is forced to its seat by a spring.
7. **COUPLED NUT AND BOLT, ELASTIC GRIPPING ACTION.** The nut or washer is composed wholly or partly of elastic material, which grips the threaded or other part of the bolt.

Search Class—

151—NUT AND BOLT LOCKS, subclasses 21, Coupled nut and bolt, Thread-lock, Distorted-nut, and 18, Coupled nut and bolt, Thread-lock, Superposed nuts.

8. **COUPLED NUT AND BOLT, LONGITUDINAL-KEY.** The nut and bolt are locked together by a key whose locking portion extends longitudinally of the bolt.
Note.—Keys which cut or bind against the threads are in Coupled nut and bolt, Thread-lock, Longitudinal-key.

Search Class—

151—NUT AND BOLT LOCKS, subclass 5, Coupled nut and bolt, Cross key, for those having a side extension which forms the locking portion of the same.

- COUPLED NUT AND BOLT, PAWL-AND-RATCHET. The nut and bolt are interlocked by pawl-and-ratchet mechanism, which automatically locks the nut or bolt from movement in one direction, but permits free movement in the other. Those pawl-like structures which are not automatic are regarded as keys.

9. **COUPLED NUT AND BOLT, PAWL-AND-RATCHET, BOLT-CARRIED PAWL.** The bolt carries or holds from rotation a pawl which interlocks with ratchet-teeth in the nut.

10. **COUPLED NUT AND BOLT, PAWL-AND-RATCHET, NUT-CARRIED PAWL.** The nut carries a pawl which rotates with the nut and interlocks with ratchet-teeth in the bolt.

11. **COUPLED NUT AND BOLT, PAWL-AND-RATCHET, NUT-CARRIED PAWL, FLEXIBLE.** A flexible pawl interlocks with ratchet-teeth carried by the bolt or by a structure secured to the bolt.

12. **COUPLED NUT AND BOLT, PAWL-AND-RATCHET, NUT-CARRIED PAWL, PIVOTED.** The pawl carried by the nut moves on a pivot to lock and unlock.

Search Class—

151—NUT AND BOLT LOCKS, subclass 25, Coupled nut and bolt, Thread-lock, Side-clutch.

13. **COUPLED NUT AND BOLT, PAWL-AND-RATCHET, WASHER-CARRIED PAWL.** The washer is secured to the bolt and carries a pawl which interlocks with a specially-made ratchet-surface of the nut. The corners of the ordinary nut are not regarded as forming a ratchet-surface.

14. **COUPLED NUT AND BOLT, THREAD-LOCK.** The nut is locked to the bolt directly or indirectly by the action upon the threads.

CLASS 151—Continued.

15. **COUPLED NUT AND BOLT, THREAD-LOCK, SUPERPOSED NUTS.** More than one nut is placed on a bolt, the outer one having some special construction or adjunct whereby it is adapted to lock the other nut. Jam-nuts are included only when they are specially adapted to serve as jam-nuts.

Search Class—

151—NUT AND BOLT LOCKS, subclasses 7, Coupled nut and bolt, Elastic gripping-action; 27, Coupled nut and bolt, Top-stop, and 21, Coupled nut and bolt, Thread-lock, Distorted-nut.

16. **COUPLED NUT AND BOLT, THREAD-LOCK, SUPERPOSED NUTS, OPPOSITELY-THREADED.** One nut has a right-hand thread, and the other a left-hand thread, the threads coöperating with a similarly-threaded bolt.

17. **COUPLED NUT AND BOLT, THREAD-LOCK, SUPERPOSED NUTS, OPPOSITELY-THREADED, KEY OR PAWL LOCKED.** The nuts are locked together by a key or by a pawl-and-ratchet mechanism.

18. **COUPLED NUT AND BOLT, THREAD-LOCK, SUPERPOSED NUTS, OPPOSITELY-THREADED, SIDE LOCKED.** The nuts are locked together by a device engaging their sides.

19. **COUPLED NUT AND BOLT, THREAD-LOCK, CAM OR CONE GRIP.** The threads of the bolt are gripped by a cam-action between the nut and washer or other part or by the action of a cone and its coating member forcing a part of the nut or washer against the bolt-threads.

20. **COUPLED NUT AND BOLT, THREAD-LOCK, CANTED NUT.** The nut at its final position tends to bend the bolt at the base of the nut. Usually the nut or the washer is wedge-shaped.

21. **COUPLED NUT AND BOLT, THREAD-LOCK, DISTORTED-NUT.** The whole or a part of the nut is distorted or changed in shape before, during, or after its application to the bolt, so that the threads of the nut grip the threads of the bolt.

Search Class—

151—NUT AND BOLT LOCKS, subclasses 7, Coupled nut and bolt, Elastic gripping action, and 15, Coupled nut and bolt, Thread-lock, Superposed nuts.

22. **COUPLED NUT AND BOLT, THREAD-LOCK, DISTORTED-THREAD.** The threads of the nut or bolt are during or after the application of the nut bent, crushed, or injured, so as to lock the nut and bolt from relative rotation.

23. **COUPLED NUT AND BOLT, THREAD-LOCK, LONGITUDINAL-KEY.** A key has its locking portion extending longitudinally of the bolt and biting or binding against the thread.

24. **COUPLED NUT AND BOLT, THREAD-LOCK, RADIAL KEY OR GIB.** A key or gib is moved radially toward the bolt and engages its threads.

25. **COUPLED NUT AND BOLT, THREAD-LOCK, SIDE-CLUTCH.** A device, not an integral part of the nut or bolt clutches or bites the threads of the nut or bolt. The locking action in most cases resembles that of the pawl and ratchet, except the part engaged by such device has no coöperating notches.

26. **COUPLED NUT AND BOLT, THREAD-LOCK, TANGENTIAL-KEY.** A key in the nut moves tangentially to the bolt and bites or binds against the threads thereof.

27. **COUPLED NUT AND BOLT, TOP-STOP.** A stop secured or locked to the bolt has a portion above the nut which locks the nut.

Search Class—

151—NUT AND BOLT LOCKS, subclass 16, Coupled nut and bolt, Thread-lock, Superposed nuts.

28. **COUPLED NUT AND BOLT, TOP-STOP, POSITIVE-LOCK.** The stop by a positive interlocking engagement with the nut, prevents rotation of the nut on the bolt.

NOTE.—Mere friction-locks are in the next preceding subclass.

29. **COUPLED NUT AND BOLT, TOP-STOP, POSITIVE-LOCK, SIDE.** The nut is locked by a portion of the stop engaging the side of the nut.

Search Class—

151—NUT AND BOLT LOCKS, subclass 44, Locked nut, Side-lock, and the subclasses thereunder.

30. **COUPLED NUT AND BOLT, TOP-STOP, THREAD-GRIPPER.** The stop is locked to the bolt by its gripping action on the bolt-threads.

Search Class—

151—NUT AND BOLT LOCKS, subclass 15, Coupled nut and bolt, Thread lock, Superposed nuts.

CLASS 151—Continued.

31. **COUPLED NUT AND BOLT, WEDGED SLOTTED BOLT.** The bolt has a slit or slot in which a wedge-shaped device moves to cause the bolt-sections to expand against the nut. The said device may be removed.

32. **LOCKED BOLT.** Devices for locking the bolt regardless of whether the nut is locked or not, but does not include means for locking the bolt to the nut or the use of flowing metal.

33. **LOCKED NUT.** The nut is locked to the base or substructure, so as to prevent its rotation. Includes all means for locking the nut regardless of whether the bolt is locked or not, but does not include means for locking the nut to the bolt or the use of flowing metal.

Note.—All rotatable washers should be cross-referenced into subclass 45, Locked nut, Side-lock, Rotatable-washer, or the subclasses thereunder.

34. **LOCKED NUT, BASE-CLUTCH.** The base or inner face of the nut is clutched automatically to the substructure.

35. **LOCKED NUT, BASE-CLUTCH, BITING-TOOTH.** The base of the nut is locked to the substructure by the biting action of one or more teeth.

36. **LOCKED NUT, BASE-CLUTCH, BITING-TOOTH, COILED-WASHER.** The tooth bites the nut-base and is carried by a washer coiled about the bolt.

37. **LOCKED NUT, BASE-CLUTCH, BITING-TOOTH, NUT-CARRIED.** The biting tooth is carried by the nut as it is turned.

Search Class—

151—NUT AND BOLT LOCKS, subclass 50, Locked nut, Side-lock, Flexible, Automatic.

38. **LOCKED NUT, BASE-CLUTCH, FRICTION.** The nut is held to the substructure by friction.

Note.—Washers which yield as the nut is turned on, so as to raise their faces next to the sides of the nut above the base of the nut, are classified under subclass 49, Locked nut, Side-lock, Flexible, and 50, Locked nut, Side-lock, Flexible, Automatic.

39. **LOCKED NUT, BASE-CLUTCH, PAWL-AND-RATCHET.** Pawl-and-ratchet mechanism locks the base of the nut to the substructure. The pawl automatically locks against movement in one direction, but permits free movement in the other.

Search Class—

151—NUT AND BOLT LOCKS, subclass 47, Locked nut, Side-lock, Rotatable-washer, Pawl-locked.

40. **LOCKED NUT, BASE-CLUTCH, PAWL-AND-RATCHET, NUT-CARRIED PAWL.** The pawl is carried by the nut and locks under the base of the nut.

Search Class—

151—NUT AND BOLT LOCKS, subclass 47, Locked nut, Side-lock, Rotatable-washer, Pawl-locked.

41. **LOCKED NUT, BASE-CLUTCH, PAWL-AND-RATCHET, YIELDING INTERLOCKING WASHER.** The nut has a ratcheted base which interlocks with a yielding washer carrying ratchet-teeth.

Note.—Washers with free yielding tongues are in subclass 39, Locked nut, Base-clutch, Pawl-and-ratchet, this class.

42. **LOCKED NUT, DISTORTED.** After the nut is seated some portion of the nut is bent to engage the substructure.

Search Class—

151—NUT AND BOLT LOCKS, subclass 46, Locked nut, Side-lock, Rotatable-washer, Bent-tongue locked.

43. **LOCKED NUT, GRAVITY NUT OR WASHER.** The nut is heavier on one side of the bolt-hole than the other, or the nut is seated in and carried by a washer heavier on one side than the other.

44. **LOCKED NUT, SIDE-LOCK.** The side of the nut is locked to prevent rotation.

45. **LOCKED NUT, SIDE-LOCK, ROTATABLE-WASHER.** The washer and nut turn together as a single piece, there being a locking action between the washer and the substructure.

46. **LOCKED NUT, SIDE-LOCK, ROTATABLE-WASHER, BENT-TONGUE LOCKED.** The washer is locked to the nut and is prevented from rotation by bending a non-elastic portion thereof so as to engage a portion of the substructure.

Search Class—

151—NUT AND BOLT LOCKS, subclass 42, Locked nut, Distorted.

47. **LOCKED NUT, SIDE-LOCK, ROTATABLE WASHER, PAWL-LOCKED.** The washer and the substructure are interlocked by a pawl and ratchet. The pawl automatically locks against movement in one direction, but permits free movement in the other.

Search Class—

151—NUT AND BOLT LOCKS, subclass 48, Locked nut, Side-lock, Pawl-and-ratchet.

48. **LOCKED NUT, SIDE-LOCK, PAWL-AND-RATCHET.** The nut is locked by pawl-and-ratchet mechanism. The pawl locks against movement in one direction, but permits it in the other. The corners of the nut are not regarded as ratchet-teeth.

Note.—Pivoted devices locking against the side of the nut are classified in subclass 65, Locked nut, Side-lock, Transversely-sliding, and sliding devices having a similar function are

CLASS 151—Continued.

classified in 61 Locked nut, Side-lock, Transversely-sliding, in this class. Search should also be made in subclass Locked nut, side-lock, Rotatable washer, Pawl-locked,

49. **LOCKED NUT, SIDE-LOCK, FLEXIBLE.** A flexible part of the locking device engages the side of the nut.

50. **LOCKED NUT, SIDE-LOCK, FLEXIBLE, AUTOMATIC.** The nut is automatically locked by a flexible device engaging the side thereof.

51. **LOCKED NUT, SIDE-LOCK, FLEXIBLE, AUTOMATIC, COILED-WASHER.** The nut is locked by a washer coiled about the bolt and having a portion automatically engaging the side of the nut.

Search Class—

151—NUT AND BOLT LOCKS, subclass 53, Locked nut, Side-lock, Flexible, Inelastic washer-tongue.

52. **LOCKED NUT, SIDE-LOCK, FLEXIBLE, AUTOMATIC, SPRING-TONGUED WASHER-PLATE.** A washer-plate has one or more spring locking-tongues engaging the side of the nut.

Search Class—

151—NUT AND BOLT LOCKS, subclass 53, Locked nut, Side-lock, Flexible, Inelastic washer-tongue.

53. **LOCKED NUT, SIDE-LOCK, FLEXIBLE, INELASTIC WASHER-TONGUE.** A washer has a non-elastic portion bent against the side of the nut after it is screwed to place. The washer must lock the nut which is seated thereon and not a nut seated on another washer.

Search Class—

151—NUT AND BOLT LOCKS, subclasses 52, Locked nut, Side-lock Flexible, Automatic, Spring-tongued washer-plate, and 3, Coupled nut and bolt, Flexible-washer, also 51, Locked nut, Side-lock, Flexible, Automatic, Coiled-washer.

54. **LOCKED NUT, SIDE-LOCK, LONGITUDINAL.** The locking device is, after the nut is seated, brought to locking position by a movement longitudinal of the bolt. The final locking movement alone is considered whatever previous movements the device has received.

55. **LOCKED NUT, LONGITUDINAL, NUT-HELD.** The nut which is locked holds in place its locking device. The locking device must not be held by a washer or other means applied under the nut before the seating thereof.

56. **LOCKED NUT, LONGITUDINAL, NUT-HELD, REVERSED-NUT.** After the nut has been seated and the locking device applied the nut is turned backwardly to lock said device.

57. **LOCKED NUT, SIDE-LOCK, LONGITUDINAL, SIDE-PIN.** A pin seated in the substructure is moved longitudinally of the bolt, so as to stand against the side of the nut.

58. **LOCKED NUT, SIDE-LOCK, LONGITUDINAL, SPIKE-HELD.** The locking device is held against the nut by a spike.

59. **LOCKED NUT, SIDE-LOCK, LONGITUDINAL, SWINGING.** The locking device swings to locking position against the side of the nut.

Note.—Pawls engaging a ratcheted surface, not the sides of the common nut, are classified in subclass 48, Locked nut, Side-lock, Pawl-and-ratchet, in this class. Search should also be made in subclass 49, Locked nut, Side-lock, Flexible, in this class.

60. **LOCKED NUT, SIDE-LOCK, LONGITUDINAL, WASHERTONGUE HELD.** The locking device is held in locking position by an integral portion of a washer standing over it.

61. **LOCKED NUT, SIDE-LOCK, TRANSVERSELY-SLIDING.** The locking device is slid transversely of the bolt after the nut is screwed on, so as to lock a side of the nut. The final locking movement alone is considered whatever previous movement the device has received.

62. **LOCKED NUT, SIDE-LOCK, TRANSVERSELY-SLIDING, KEY, PLATE, OR BAR.** The locking device is a key, plate, or bar.

63. **LOCKED NUT, SIDE-LOCK, TRANSVERSELY-SLIDING, KEY, PLATE, OR BAR, NUT-HELD.** The key, plate, or bar is held in place by the nut. The locking device must not be held by a washer or other means applied before the nut is seated.

64. **LOCKED NUT, SIDE-LOCK, TRANSVERSELY-SLIDING, KEY, PLATE, OR BAR, SLIDING-WASHER.** The locking device is a washer which is driven to locking position after the nut is seated, the washer bearing a stop to lock the side of the nut.

65. **LOCKED NUT, SIDE-LOCK, TRANSVERSELY-SWINGING.** The locking device swings transversely of the bolt after the nut is on, so as to engage a side of the nut.

Note.—Pawl-and-ratchet mechanism where a special ratchet-face is employed may be found under subclass 48, Locked nut, Side-lock, Pawl-and-ratchet, this class. Flexible swinging devices are classified under subclass 49, Locked nut, Side-lock, Flexible, this class.

66. **LOCKED NUT, TRANSVERSE BASE-LOCKING KEY.** A key extends transversely of the bolt between the base of the nut and the substructure.

CLASS 153.—METAL-BENDING.

DEFINITIONS.

Class.

This class includes all machines and processes which simply bend metal and are not elsewhere classifiable.

Note.—It does not include machines or processes for closing or pressing lock-seams, for drawing plates by spinning or by die-presses to form dished or tubular articles, nor for making horseshoes, nor hooks and eyes.

Subclasses.

1. BINDING AND COVERING. Binding and covering with metal various articles, as stove-boards, moldings, corset-stays, etc.
- 1.5. BINDING AND COVERING, SHOE-LACE TIPPING. Machines and devices for applying sheet-metal or wire tips to shoe-laces.
2. COMBINED OPERATIONS. Combined operations not belonging wholly to any other subclass.
3. COMBINED OPERATIONS, ANGULAR BENDING AND CURVING. The metal bent is given both an angle and a curve.
4. COMBINED OPERATIONS, ANGULAR BENDING AND CURVING, PIVOTED BENDER. That part of the bender which engages the metal is pivoted.
5. COMBINED OPERATIONS, ANGULAR BENDING AND CURVING, PIVOTED BENDER, CHANGEABLE FORMER. Making angles and curves of various forms by interchanging forming-blocks, over which the work is bent, often by hand.
6. COMBINED OPERATIONS, ANGULAR BENDING AND TWISTING. The metal is both angularly bent and twisted.
7. COMBINED OPERATIONS, CURVING AND CORRUGATING. The metal is both curved and corrugated.
8. COMBINED OPERATIONS, CURVING AND CORRUGATING, HAMMER-ACTION. Machines operating by a reciprocating or oscillating hammer-stroke, usually to make curved moldings, and working progressively along the metal as it is fed.
9. BEADING AND CRIMPING ROLLS. Beads and crimps metal by means of rolls, commonly known as "tinnerns' rolls." They do not curl the edges, devices which perform such an operation being under subclass 59, Curving or straightening, Roll, Edge-curling, in this class.
Search Class—
153—METAL-BENDING, subclasses 30, Angular, Roll, Flanging, Tinnerns' rolls; 59, Curving or straightening, Roll, Edge-curling; 71, Corrugating, Tubes, Spiral bend; 77, Corrugating, Roll.
10. MISCELLANEOUS. Miscellaneous bending machines and processes not classifiable in any of the other subclasses.
11. ANGULAR. Miscellaneous machines and processes which make angular bends in metal. In some cases the work is bent back upon itself.
Search Class—
153—METAL-BENDING, subclass 32, Curving or straightening.
12. ANGULAR, COMBINED RECIPROCATING BENDER AND PIVOTED SIDE-SHAPER. Employs a reciprocating bender to perform one step and one or more pivoted benders operating at the side of the reciprocating bender to perform the other step.
Search Class—
153—METAL-BENDING, subclass 33, Curving or straightening, Combined reciprocating bender and pivoted side-shaper.
13. ANGULAR, COMBINED RECIPROCATING BENDER AND SLIDING SIDE-SHAPER. Employs a reciprocating bender to perform one step and one or more sliding benders operating at the side of and at or near a right angle to the reciprocating bender to perform the other step.
Search Class—
153—METAL-BENDING, subclass 34, Curving or straightening, Combined reciprocating bender and sliding side-shaper.
14. ABOLISHED.
15. ANGULAR, PIVOTED BENDER. The part or bender which engages the metal to form the bend is pivoted.
16. ANGULAR, PIVOTED BENDER, BED-CLAMPED WORK. The work is secured to a bed by a movable clamping-jaw, while the bender operates upon the free or projecting portion thereof. Contains mostly devices for turning the edges of sheets to form seaming-hooks.

CLASS 153—Continued.

Search Class—

153—METAL-BENDING, subclasses 5, Combined operations, Angular bending and curving, Pivoted bender, Changeable former; 12, Angular, Combined reciprocating bender and pivoted side-shaper.

17. ANGULAR, PIVOTED BENDER, BED-CLAMPED WORK, MULTIPLE SIDE. Bends more than one of the free portions of the work extending beyond the sides of the bed or clamp.

18. ANGULAR, PIVOTED BENDER, BED-CLAMPED WORK, MULTIPLE SIDE, INCLOSED FORMS. Makes inclosed bodies or polygonal shapes from rods and sheets.

19. ANGULAR, PIVOTED BENDER, BED-CLAMPED WORK, ROTARY. The bending device operates on a plate clamped to a rotating bed. The bender is, as a rule, carried by a pivoted frame and may have an engaging antifriction-roller.

Search Class—

113—SHEET-METAL WARE, MAKING, subclasses 52, Spinning; 53, Spinning, Carriage feed, Pattern-controlled.

20. ANGULAR, PIVOTED BENDER, BENDER-ATTACHED WORK. The bender which has the work attached thereto turns about a pivot or a fixed axis.

Search Class—

153—METAL-BENDING, subclasses 40, Curving or straightening, Pivoted bender, Bender-attached work; 41, Curving or straightening, Pivoted bender, Bender-attached work, Beading and curving; 42, Curving or straightening, Pivoted bender, Bender-attached work, Beading or tube-forming.

21. ANGULAR, RECIPROCATING BENDER. The part or bender which engages the metal has a reciprocating or right-line movement.

Search Class—

153—METAL-BENDING, subclasses 48, Curving or straightening, Reciprocating bender; 76, Corrugating, Reciprocating bender.

22. ANGULAR, RECIPROCATING BENDER, INCLOSED FORMS. Makes tube-shaped or polygonal bodies from bars or sheets.

23. ANGULAR, RECIPROCATING BENDER, PAN-SHAPED DIES. Includes a female die, shaped like the common angular bake-pan, into which the male die presses sheets to form pan-shaped bodies, the dies being adapted to permit the projection of the ears at the angles.

24. ANGULAR, RECIPROCATING BENDER, SCREW-OPERATED. The non-rotating bender is drawn by a screw in the path of a portion of the work. This subclass also includes devices which bend by repeated hammer-strokes and are fed by a screw to progressively bend the work. The devices are mostly for flanging holes.

Search Class—

151—METAL-BENDING, subclass 27, Angular, Reciprocating bender, Bed-clamped work, Rotary bending-head.

25. ANGULAR, RECIPROCATING BENDER, BED-CLAMPED WORK. The portion of the work projecting beyond the bed on which it is clamped is bent.

26. ANGULAR, RECIPROCATING BENDER, BED-CLAMPED WORK, ROTARY. The work while clamped to a rotating bed is bent, usually to form flanges. The bender is in most cases provided with an antifriction-roller.

27. ANGULAR, RECIPROCATING BENDER, BED-CLAMPED WORK, ROTARY BENDING-HEAD. A rotating bending-head, usually carrying antifriction devices, moves in the path of the metal to be bent. Mostly for flanging holes.

Search Class—

153—METAL-BENDING, subclasses 24, Angular, Reciprocating bender, Screw-operated; 81, Pipe expanders and flangers, Travelling, Rotary; 82, Pipe expanders and flangers, Travelling, Rotary, Internal, Wedge-feed.

28. ANGULAR, ROLL. Makes angles by the action of rolls. Mere antifriction-rolls carried by a pivoted or a reciprocating bender are found under the subclasses having these titles.

Search Class—

153—METAL-BENDING, subclasses 54, Curving or straightening, Roll; 77, Corrugating, Roll; 3, Combined operations, Angular bending and curving.

29. ANGULAR, ROLL, FLANGING. Flanges plates, usually circular, by passing them between feeding-rolls.

30. ANGULAR, ROLL, FLANGING, TINNERS' ROLLS. Forms flanges by means of the common machine known as "tinnerns' rolls." They usually form seaming-flanges on the edges of sheets or inclosed forms.

CLASS 153—Continued.

Search Class—

153—METAL-BENDING, subclasses 9, Beading and crimping rolls; 59, Curving or straightening, Roll, Edge-curling; 72, Corrugating, Tubes, Spiral bend, Roll.

31. ANGULAR, ROLL, FLANGING, PIVOTED TABLE. Flanges plates by feeding them between rolls while the table or bed supporting the plates is gradually tilted.

32. CURVING OR STRAIGHTENING. Miscellaneous machines and processes for curving or straightening metal.

Search Classes—

153—METAL-BENDING, subclass 11, Angular.

80—METAL-ROLLING, subclass 21, Platen-rolling, Disk platens.

140—WIRE-WORKING, subclasses 105, Crimping; 106, Crimping, Implements; 139, Wire cutting and straightening; 140, Wire cutting and straightening, Predetermined lengths; 147, Wire straightening; 148, Wire straightening, Rolls.

144—WOOD WORKING, subclasses 265, Wood-bending, Former, Fixed, Strap and screw; 263, Wood-bending, Former, Fixed, Strap-and-windlass.

33. CURVING OR STRAIGHTENING, COMBINED RECIPROCATING BENDER AND PIVOTED SIDE-SHAPER. Machines having a reciprocating bender performing one step and one or more pivoted benders operating at the side of the reciprocating bender and performing the other step.

Search Class—

153—METAL-BENDING, subclass 12, Angular, Combined reciprocating bender and pivoted side-shaper.

34. CURVING OR STRAIGHTENING, COMBINED RECIPROCATING BENDER AND SLIDING SIDE-SHAPER. Machines having a reciprocating bender performing one step and one or more sliding benders operating at the side of and at or near a right angle to the reciprocating bender and performing the other step.

Search Class—

153—METAL-BENDING, subclass 12, Angular, Combined reciprocating bender and sliding side-shaper.

35. CURVING OR STRAIGHTENING, STRETCHING. The metal is stretched to take out bends and unevenness.

36. CURVING OR STRAIGHTENING, TRAVELING FLEXIBLE CORE. Machines for bending tubes in which a flexible core or a series of spheres or spools is made to travel within the tube.

37. CURVING OR STRAIGHTENING, FLIER-FRAME. The metal is straightened by passing through a rotary frame which bends every part in a circular lateral direction.

Search Class—

140—WIRE-WORKING, subclasses 139, Wire cutting and straightening; 140, Wire cutting and straightening, Predetermined lengths.

38. CURVING OR STRAIGHTENING, THREE-POINT JACKS. Small portable devices engaging the metal at three points, one point being movable to bend the work. This subclass is composed mostly of axle-benders and jim-crows.

39. CURVING OR STRAIGHTENING, PIVOTED BENDER. The part of bender which engages the metal is pivoted.

40. CURVING OR STRAIGHTENING, PIVOTED BENDER, BENDER-ATTACHED WORK. The work is attached to and moves with the pivoted bender. Cylinders and rods having means, as a slot or a clamp, for securing the work may be found here or in the subclasses subordinate hereto.

Search Classes—

153—METAL-BENDING, subclass 20, Angular, Pivoted bender, Bender-attached work.

144—WOODWORKING, subclasses 267, Wood-bending, Former, Pivotal; 268, Wood-bending, Former, Pivotal, Coiling.

41. CURVING OR STRAIGHTENING, PIVOTED BENDER, BENDER-ATTACHED WORK, BEADING AND CURVING. Forms a bead or curl, as under the last subclass above, and in addition forms a curve in a similar manner. This subclass is mostly composed of machines for making beaded eaves-troughs.

Search Class—

153—METAL-BENDING, subclass 5, Combined operations, Angular bending and curving, Pivoted bender, Changeable former.

42. CURVING OR STRAIGHTENING, PIVOTED BENDER, BENDER-ATTACHED WORK, BEADING OR TUBE-FORMING. Form tubes or tube-like beads on the edges of sheets.

43. CURVING OR STRAIGHTENING, PIVOTED BENDER, BENDER-ATTACHED WORK, TRAVELING BED. The work is attached to a cylinder or other pivoted device, while a traveling bed upon which the work is laid slides so as to support it at the line of curvature.

Search Class—

153—METAL-BENDING, subclass 74, Corrugating, Bed and cylinder.

44. CURVING OR STRAIGHTENING, PIVOTED BENDER, OPPOSING JAWS. The work is bent by jaws which move toward each other.

45. CURVING OR STRAIGHTENING, PIVOTED BENDER, SWEEP-ARM. The work is bent by an arm having a portion which sweeps or travels along the form or bed upon which the work remains stationary.

CLASS 153—Continued.

Search Classes—

59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclass 56, Horseshoe-making, Bending, and all subclasses of combined machines under Horseshoe-making, in which the operation of bending occurs.

144—WOODWORKING, subclass 262, Wood-bending, Former, Fixed, Radial arm and roller.

46. CURVING OR STRAIGHTENING, PIVOTED BENDER, SWEEP-ARM, STATIONARY CLAMPED WORK. The work is held from endwise movement by a clamp, while a sweep-arm bends the metal over the bed or form.

Search Class—

144—WOODWORKING, subclass 262, Wood-bending, Former, Fixed, Radial arm and roller.

47. CURVING OR STRAIGHTENING, PIVOTED BENDER, VARIABLE DIE-FACE. The working face of the die may be adjusted to various shapes or contours. This subclass is mostly composed of machines for bending leaf-springs.

Note.—Machines and processes involving tempering are elsewhere classified.

Search Class—

153—METAL-BENDING, subclass 51, Curving or straightening, Reciprocating bender, Variable die-face.

48. CURVING OR STRAIGHTENING, RECIPROCATING BENDER. The part or bender which engages the metal has a reciprocating or right-line movement.

Search Class—

153—METAL-BENDING, subclasses 21, Angular, Reciprocating bender; 76, Corrugating, Reciprocating bender; 38, Curving or straightening, Three-point jacks; 8, Combined operations, Curving and corrugating, Hammer-action.

49. CURVING OR STRAIGHTENING, RECIPROCATING BENDER, INCLOSED FORMS. Forms tube-shaped or annular bodies from sheets or bars. Here may be found many machines for forming eyes on rods or beads or tubes on sheets.

Search Class—

153—METAL-BENDING, subclass 34, Curving or straightening, Combined reciprocating bender and sliding side-shaper.

50. CURVING OR STRAIGHTENING, RECIPROCATING BENDER, AUTOMATIC BEND-DETECTOR. Bends are detected by feelers which make the bend-correcting device operative.

51. CURVING OR STRAIGHTENING, RECIPROCATING BENDER, VARIABLE DIE-FACE. The working face of the die may be adjusted to various shapes or contours. This subclass is mostly composed of machines for bending leaf-springs.

Search Class—

153—METAL-BENDING, subclass 47, Curving or straightening, Pivoted bender, Variable die-face.

52. CURVING OR STRAIGHTENING, RECIPROCATING BENDER, Laterally-Traveling. The bender not only reciprocates, but is also movable, together with its carrier-frame, bodily along the bed or work.

53. CURVING OR STRAIGHTENING, RECIPROCATING BENDER, SCREW-OPERATED. A screw actuates the bender to reciprocate it.

Search Class—

153—METAL-BENDING, subclass 38, Curving or straightening, Three-point jacks.

54. CURVING OR STRAIGHTENING, ROLL. Bends by passing the work through feeding-rolls.

Search Class—

153—METAL-BENDING, subclasses 23, Angular, Roll; 77, Corrugating, Roll.

55. CURVING OR STRAIGHTENING, ROLL, HOOP. Flares or flares and curves hoops.

56. CURVING OR STRAIGHTENING, ROLL, ANGLE-BAR. Bends railroad-rails and other angle-bars by rolls especially constructed for such work.

Search Class—

80—METAL-ROLLING, subclass 59, Rolls, Pass arrangement.

57. CURVING OR STRAIGHTENING, ROLL, ANGLE-BAR, SECTIONAL ROLLS. The rolls are composed of sections, exchangeable or adjustable, to accommodate angle-bars of various shapes and dimensions.

58. CURVING OR STRAIGHTENING, ROLL, BARREL-SHAPED. Employs one or more barrel-shaped rolls, which thin the metal on a longitudinal line to make or remove curves.

59. CURVING OR STRAIGHTENING, ROLL, EDGE-CURLING. Curls or beads the edges of metal. Sometimes curls the edge over a wire.

Search Class—

153—METAL-BENDING, subclasses 9, Beading and crimping rolls; 30, Angular, Roll, Flanging, Tinner's rolls.

60. CURVING OR STRAIGHTENING, ROLL, SKEWED. The rolls have their axes angularly arranged relatively to each other.

CLASS 153—Continued.

Search Classes—

- 80—METAL-ROLLING, subclasses 11, Tubes; 13, Tubes, Axial rolling; 140, WIRE-WORKING, subclasses 139, Wire cutting and straightening; 140, Wire cutting and straightening, Pre-determined lengths; 147, Wire straightening; 148, Wire straightening, Rolls.
61. CURVING OR STRAIGHTENING, ROLL, INCLOSED-WORK RELEASEING. Machines having mechanism for releasing inclosed work, as tubes, tires, etc., from the rolls.
62. CURVING OR STRAIGHTENING, BOILER-FORMERS. Formers or patterns over or about which washboilers are bent or shaped.
63. CURVING OR STRAIGHTENING, FLEXIBLE CORES. Cores or fillers which are put into tubes to support the walls during the bending action. Includes such fillers as spheres, sand, liquid, as well as coils of wire, plates, etc.
64. COILING. Includes the bending of tubes, bars, and sheets into coils, but does not include the combined operations of bending and tempering.
- Search Classes—
28, CORDAGE, subclasses 2, Banding; 6, Covering cord.
140—WIRE-WORKING, subclasses 78, Article making or forming, Conical springs; 79, Article making or forming, Conical springs, By rolls.
154, LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 6, Hose-making, Axial-feed.
- 64.5. COILING, FLAT WIRE, EDGE WINDING. Coiling by winding flat wire or strips edgewise about an article, form, or mandrel.
- Search Classes—
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 72, Nut and washer making, and the subclasses thereunder, especially 73, Nut and washer making, Lock washer making, and 74, Nut and washer making, Coiling and forging.
29—METAL WORKING, subclass 23, Special work, Toothed cylinder making, for structural features or details.
78—METAL FORGING AND WELDING, subclass 94, Welding, Processes, Rings and tubes, and 80, METAL ROLLING, subclass 1, Miscellaneous, for conveyor-flight making devices involving rolling and bending or winding.
65. COILING, SHUNT-GUIDE. A shunting device, usually an inclined block or an offset or skewed roll, guides the metal to form a helix.
66. COILING, SPIRAL DIE. The metal is forced through a spiral die or the latter is forced over the metal to form a helix.
67. COILING, TRAVELING GUIDE OR MANDREL. The metal to be coiled is fed from a traveling guide or the mandrel passes along the guide as the coil is formed.
- Search Class—
140—WIRE-WORKING, subclasses 78, Article making or forming, Conical springs; 79, Article making or forming, Conical springs, By rolls.
68. CORRUGATING. Forms corrugations. Devices for making corrugations by forming one bend at a time are included whenever the mechanism is especially adapted or constructed to make a series of bends.
69. CORRUGATING, TUBES. Makes corrugations in tubes.
- 69.5. CORRUGATING, TUBES, ELBOW - BENDING. Machines which bend elbows of stovepipes, etc., mainly by crimping the tube transversely and compressing the corrugation on one side of the tube. Many of the machines have mechanism for feeding the tube.
- Search Classes—
153—METAL-BENDING, subclass 79, Pipe expanders and flangers, Non-traveling.
113—SHEET-METAL WARE, MAKING, subclass 36, Tube-making, Transverse seaming, Die.
70. CORRUGATING, TUBES, LONGITUDINAL BEND. Makes longitudinal corrugations in tubes and tube-like articles, such as caps and cups.
71. CORRUGATING, TUBES, SPIRAL BEND. Makes spiral bends or screw-threads in tubes or tube-like articles, such as caps.
- Search Class—
153—METAL-BENDING, subclasses 9, Beading and crimping rolls; 30, Angular, Roll, Flanging, Tinner's rolls; 59, Curving or straightening, Roll, Edge curling.

CLASS 153—Continued.

72. CORRUGATING, TUBES, SPIRAL BEND, ROLL. Makes spiral bends in tubes or tube-like articles by passing them between feeding-rollers.
73. CORRUGATING, TUBES, TRANSVERSE BEND. Makes transverse bends in tubes or tube-like articles.
74. CORRUGATING, BED AND CYLINDER. A corrugated cylinder or a segment thereof cooperates with a corrugated bed to corrugate the metal between them.
- Search Class—
153—METAL-BENDING, subclass 43, Curving or straightening, Pivoted bender, Bender-attached work, Traveling bed.
75. CORRUGATING, PIVOTED BENDER. A pivoted device engages the metal.
76. CORRUGATING, RECIPROCATING BENDER. A reciprocating device engages the metal.
- Search Class—
153—METAL-BENDING, subclasses 8, Combined operations, Curving and corrugating, Hammer-action; 21, Angular, Reciprocating bender; 48, Curving or straightening, Reciprocating bender.
77. CORRUGATING, ROLL. Makes corrugations by passing the work between feeding-rolls.
- Search Class—
153—METAL-BENDING, subclasses 28, Angular, Roll; 54, Curving or straightening, Roll; 9, Beading and crimping rolls.
78. TWISTING. Gives twist to metal to form lightning-rods, augers, conveyer-flights, etc.
- Search Class—
140—WIRE-WORKING, subclass 149, Wire twisting.
79. PIPE EXPANDERS AND FLANGERS, NON-TRAVELING. Machines and implements which expand or flange tubes by means of a non-traveling expanding or swaging tool. This subclass includes expanders for boiler-flues, stovepipes, etc.
- Search Classes—
153—METAL-BENDING, subclass 24, Angular, Reciprocating bender, Screw-operated; 78, METAL FORGING AND WELDING, subclass 63, Forging, Dies, Upsetting, Tubular articles; 81, TOOLS, subclass 188, Pipe and rod cutters, Non-traveling, Internal.
80. PIPE EXPANDERS AND FLANGERS, NON-TRAVELING, SEGMENTAL EXPANDER. Machines and implements for expanding and flanging tubes by means of a non-traveling segmental expanding-die. This subclass includes expanders for boiler-flues, bung-hole linings, tubular valve-seats, etc.
- Search Class—
81—TOOLS, subclass 188, Pipe and rod cutters, Non-traveling, Internal.
- 80.5. PIPE EXPANDERS AND FLANGERS, TRAVELING. Devices for expanding tubes adapted to have a relative travel with respect to the tube during the expanding operation.
- Search Classes—
153—METAL-BENDING, subclass 32, Curving or straightening.
29—METAL WORKING, subclass 162, Blanks and processes, Lined pipes and tanks.
81. PIPE EXPANDERS AND FLANGERS, TRAVELING, ROTARY. Machines and implements which expand or flange tubes by means of rotatable dies or rollers.
- Search Classes—
153—METAL-BENDING, subclass 27, Angular, Reciprocating bender, Bed-clamped work, Rotary bending-head; 81, TOOLS, subclasses 189, Pipe and rod cutters, Traveling, External; 193, Pipe and rod cutters, Traveling, Internal; 194, Pipe and rod cutters, Traveling, Internal, Rotary, and 195, Pipe and rod cutters, Traveling, Internal, Rotary, Wedge-feed.
82. PIPE EXPANDERS AND FLANGERS, TRAVELING, ROTARY, WEDGE-FEED. Machines and implements which expand tubes by means of rotatable dies or rollers which are spread apart by means of wedges or a conical mandrel. This subclass includes expanders for boiler-flues, bung-hole linings, tubular valve-seats, etc.
- Search Class—
81—TOOLS, subclass 195, Pipe and rod cutters, Traveling, Internal, Rotary, Wedge-feed.

CLASS 154.—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES.

DEFINITIONS.

Class.

The general scope of this class embraces the structure and manufacture of (1) material composed of a plurality of layers of flexible fabric secured together by adhesion, (2) material of non-homogeneous nature having layers or sections of a plastic character, and (3) all fabrics not provided for in other classes.

While this class is based mainly on laminated materials and their manufacture, those subclasses covering structure or the manufacture thereof for particular purposes are usually of sufficient breadth to include all structures and operations for the purpose mentioned, when not elsewhere classifiable, even though definite lamination is absent.

Apparatus and processes for making certain special articles analogous to laminated fabrics are included; but articles *per se* other than flexible fabrics or structure especially provided for, whether related to the special making groups or otherwise, are excluded.

The patents in other classes which are closely related to those of this class along various lines are so numerous that a complete system of cross-referencing has not been attempted, search notes being relied on to direct the search.

Subclasses.

1. MISCELLANEOUS APPARATUS. Apparatus for the manufacture of structures classifiable in this class or performing operations within the scope of the class not otherwise provided for.

Search Classes—

- 11—BOOKBINDING, subclass 2, Binding machines, for similar mechanical structures; also in
12—BOOT AND SHOE MAKING, subclass 80, Cement applying devices.
93—PAPER MANUFACTURES, especially subclass 92, Tag machines, Washer attaching.
100—PRESSES, subclass 67, Copying, and the subclasses thereunder.
144—WOODWORKING, subclasses 279, Glue applying and pressing apparatus; 281, Veneer presses, and 282, Veneer presses, Roller.
181—ACOUSTICS, subclass 14, Graphophones, Tablets, Methods and machines for making.
216—LABEL PASTING AND PAPER HANGING.
223—APPAREL APPARATUS, especially subclasses 4, Corset stiffeners, Making, and 17, Garment formers.

2. MISCELLANEOUS PROCESSES. Processes for the manufacture of structures classifiable in this class or performing operations within the scope of the class not otherwise provided for.

3. BELT MAKING. The making of belt structure of adhering sheets or layers unless all the layers are of leather. This subclass includes apparatus.

Search Class—

- 63—LEATHER MANUFACTURES, for making belts entirely of leather.

4. BELT MAKING, PROCESSES. Processes of making belt structure of adhering sheets or layers unless all the layers are of leather.

Search Classes—

- 154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 52, Fabrics, Wear and strain resisting.
74—MACHINE ELEMENTS, subclass 63, Belts, Laminated.
193—CONVEYERS, subclass 4, Endless, Belts.

5. HOSE MAKING. The making of flexible tubes suitable for conducting fluids not classifiable in other classes. This subclass includes miscellaneous apparatus.

Search Classes—

- 154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 9, Tire making, and the subclasses thereunder.
28—CORDAGE, subclass 6, Covering cord, for apparatus for winding hose with cord or its equivalent with or without a coating treatment; subclass 4, Braiding, for machines for braiding tubes.
93—PAPER MANUFACTURES, subclasses of Tube machines.
139—WEAVING, for weaving of tubes.

6. HOSE MAKING, AXIAL FEED. Apparatus in which either the hose or the forming mechanism is advanced along the longitudinal axis of the hose.

CLASS 154—Continued.

Search Class—

- 93—PAPER MANUFACTURES, subclass 82, Tube machines, Axial feed.

7. HOSE MAKING, CONVOLUTE WIND. Apparatus designed to wind the sheet, without longitudinal movement, directly upon itself, so as to form convolutions.

Search Class—

- 93—PAPER MANUFACTURES, subclass 81, Tube machines, Convolute wind.

8. HOSE MAKING, PROCESSES. Processes not otherwise classifiable of making flexible tubes suitable for conducting fluid.

Search Classes—

- 137—WATER DISTRIBUTION, subclass 90, Mains and pipes, Hose.
139—WEAVING, subclass 72, Fabrics, Tubular.

9. TIRE MAKING. The making of fluid containing tires and those of a composite type, built up from adhesive, plastic, and fibrous materials, not classifiable in other arts. This subclass includes miscellaneous apparatus.

Search Classes—

- 154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, the "Hose making" subclasses, and search notes thereof.
18—PLASTICS, when the invention resides in a new molding or vulcanizing operation.

10. TIRE MAKING, FABRIC STRUCTURE BUILDING. Apparatus for building up tire structure out of sheet materials.

11. TIRE MAKING, THREAD STRUCTURE BUILDING. Apparatus for building up tires from thread stock. Weaving and other established textile methods of building structure from thread are not included.

12. TIRE MAKING, PROCESSES. Processes not otherwise classifiable of building up tires of adhesive, plastic, and fibrous materials.

Search Class—

- 152—RESILIENT TIRES AND WHEELS, for related structure.

13. TIRE MAKING, PROCESSES, FILLING FEATURE. Processes which wholly or in part relate to filling a hollow tire with material other than gaseous, generally of a fluent plastic nature.

Search Classes—

- 154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 18, Ball making, Golf ball, Filling feature.
226—PACKAGING LIQUIDS, subclass 9, Filling machines, for filling containers with liquid.

14. TIRE MAKING, PROCESSES, PNEUMATIC. Processes for making tires adapted to contain air or gas under pressure.

15. TIRE MAKING, PROCESSES, PNEUMATIC, PUNCTURE CLOSING TYPE. Processes for producing tire structure adapted to automatically close or heal punctures and prevent deflation.

Search Class—

- 152—RESILIENT TIRES AND WHEELS, subclass 25, Repairing, Healing compounds, for healing compounds.

16. BALL MAKING. The making of composite or sectional balls, usually of layers or portions adhering together, when the operations are not elsewhere classifiable.

Search Class—

- 46—GAMES AND TOYS, subclass 4, Balls and bats, for related structures.

17. BALL MAKING, GOLF BALL. The making of golf balls of composite or sectional structure.

18. BALL MAKING, GOLF BALL, FILLING FEATURE. Inventions that involve filling a hollow golf ball with material other than air or gas, usually of a fluent plastic nature.

Search Class—

- 154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 13, Tire making, Processes, Filling feature.

19. BALL MAKING, GOLF BALL, WINDING FEATURE. Inventions that involve a winding step.

Search Classes—

- 226—PACKAGING LIQUIDS, subclass 9, Filling machines, for filling apparatus features.
242—WINDING AND REELING, subclass 2, Ball or mass winding.

CLASS 154—Continued.

20. **LINOLEUM MAKING.** The making of floor or similar coverings from a material composed of linseed oil specially treated or equivalent binder mixed with ground cork or like substance when the invention does not fall in any general class. The product may or may not be united to a foundation of fabric. Linoleum making in this class is very closely related to inventions found in class 18, **PLASTICS**, but all patents covering the formation of these coverings are classified here unless the invention is clearly of general utility in the plastic art. This subclass is limited to apparatus.

Search Classes—

- 144—WOODWORKING, subclass 281, Veneer presses, for various similar apparatus.
21. **LINOLEUM MAKING, INLAID.** Apparatus for producing sheets of linoleum having a definite pattern or design extending through the sheet or a substantial portion thereof.

22. **LINOLEUM MAKING, INLAID, PATTERN FORMING.** Apparatus employed in the formation or development of the pattern in linoleum and not falling within either of the two following subclasses.

23. **LINOLEUM MAKING, INLAID, PATTERN FORMING, FROM PLASTIC MASSES.** Apparatus for producing the pattern in inlaid linoleum directly from unmolded plastic stock materials.

Search Classes—

- 18—PLASTICS, for analogous apparatus.
- 25—PLASTIC BLOCK AND EARTHENWARE APPARATUS.
- 107—BREAD, PASTRY, AND CONFECTION MAKING.
- 226—PACKAGING LIQUIDS, subclass 9, Filling machines.
24. **LINOLEUM MAKING, INLAID, PATTERN FORMING, FROM SHEETS.** Apparatus for developing the pattern in linoleum from previously formed sheets.

Search Class—

- 164—CUTTING AND PUNCHING SHEETS AND BARS, for the cutting portion of the mechanism.

25. **LINOLEUM MAKING, PROCESSES.** Miscellaneous processes of making linoleum.

Search Classes—

- 154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 49, Fabrics, Floor.
- 106—PLASTIC COMPOSITIONS, subclass 7, Floor cloth.

26. **LINOLEUM MAKING, PROCESSES, INLAID.** Processes for the production of inlaid linoleum.

27. **HEAT INSULATING COVERING MAKING.** The making of coverings for preventing the transmission of heat not elsewhere classifiable. This subclass includes apparatus.

Search Class—

- 154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclasses 44, Heat insulating coverings, and 29, Yielding fabric making, and the subclasses thereunder.

28. **HEAT INSULATING COVERING MAKING, PROCESSES.** Processes of making heat insulating coverings not elsewhere classifiable.

29. **YIELDING FABRIC MAKING.** The making of fabrics, generally for carpet linings or packing purposes, usually designed to yield in a direction transverse to the plane of the fabric. Covers all operations for producing this type of fabric not elsewhere classifiable. This subclass includes miscellaneous apparatus.

Search Classes—

- 19—CARDING, subclass 10, Wadding.
- 38—FELT AND FUR.
- 155—CHAIRS, subclass 43, Upholstery.

30. **YIELDING FABRIC MAKING, CORRUGATING AND INDENTING.** Apparatus for producing definite corrugations, plaits, and indentations, usually in heavy paper or like fabric.

Search Classes—

- 18—PLASTICS, subclass 10, Molding devices, Rolling, Sheets.
- 92—PAPER MAKING AND FIBER LIBERATION, subclass 62, Finishing, Wrinkling, for irregular wrinkling of paper, such as in crape paper making.
- 153—METAL BENDING, subclass 68, Corrugating, and the subclasses thereunder.
- 223—APPAREL APPARATUS, subclass 39, Plaiters, and the subclasses thereunder.

31. **YIELDING FABRIC MAKING, CORRUGATING AND INDENTING, FACING FEATURE.** Apparatus for producing corrugations, indentations, etc., and also for applying one or more facings to the indented material.

32. **YIELDING FABRIC MAKING, FACING CORRUGATED AND INDENTED STRUCTURE.** Apparatus especially designed for applying one or more facings to previously corrugated or indented fabric.

33. **YIELDING FABRIC MAKING, PROCESSES.** Processes of making yielding fabrics not elsewhere classifiable.

Search Class—

- 154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 54, Fabrics, Yielding.

34. **FABRIC PARCHMENTIZING AND UNITING.** The building up of a laminated fabric by parchmentizing at least one layer of vegetable fabric and uniting the parchmentized structure to at least one layer of like or different character.

CLASS 154—Continued.

Search Class—

- 8—BLEACHING AND DYEING, for parchmentizing when not involving any uniting feature.

35. **FABRIC COATING AND UNITING.** The building up of a laminated fabric by coating with an adhesive and uniting a plurality of flexible fabrics when not provided for in any of the special groups. This group does not include making of structure of special form, but relates only to the production of compound fabric stock. This subclass includes miscellaneous apparatus.

Search Classes—

- 11—BOOKBINDING, subclass 2, Binding machines, for apparatus structure.
- 12—BOOT AND SHOE MAKING, subclass 80, Cement applying devices.
- 41—FINE ARTS, subclass 10, Gilding leaf.
- 100—PRESSES, subclass 67, Copying, and the subclasses thereunder.
- 144—WOODWORKING, subclasses 279, Glue applying and pressing apparatus; 281, Veneer presses, and 282, Veneer presses, Roller.
- 216—LABEL PASTING AND PAPER HANGING.

36. **FABRIC COATING AND UNITING, SHEET AND WEB.** Apparatus for uniting a sheet or series of sheets of definite dimensions to one or more continuous webs.

Search Class—

- 144—WOODWORKING, subclasses 279, Glue applying and pressing apparatus, and 282, Veneer presses, Roller.

37. **FABRIC COATING AND UNITING, WEBS.** Apparatus designed for continuously uniting a plurality of endless webs.

38. **FABRIC COATING AND UNITING WEBS, ROOFING.** Apparatus for producing continuous laminated roofing or weather proof building fabrics.

Search Class—

- 154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 51, Fabrics, Waterproof, Roofing.

39. **FABRIC COATING AND UNITING, WEBS, ROOFING, SANDING FEATURE.** Apparatus for producing laminated roofing webs and also applying a coating of sand or equivalent material.

40. **FABRIC COATING AND UNITING, PROCESSES.** Processes of making compound fabric stock by coating one or more fabrics with an adhesive and uniting.

Search Class—

- 154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 46, Fabrics, and the subclasses thereunder.

41. **AFFIXING FABRIC COVERING.** The securing of fabric by an adhesive binder to objects and rigid surfaces when the operation does not fall in any other class. The covering is generally of a waterproof protective nature.

Search Classes—

- 61—HYDRAULIC ENGINEERING, subclass 43, Piles, Protected, for applying protective coverings to piles.
- 108—ROOFS, subclass 7, Fabric, for affixing roofing fabrics.
- 137—WATER DISTRIBUTION, subclass 75, Mains and pipes, Pipes, for pipes having protective coverings applied.
- 144—WOODWORKING, subclass 279, Glue applying and pressing apparatus, for affixing fabric backings in building up wooden stock.
- 216—LABEL PASTING AND PAPER HANGING, for securing wall paper by adhesives.

42. **ADHERING SEAM FORMING.** The formation of seams including an adhesive binder when not falling in some particular art.

Search Classes—

- 12—BOOT AND SHOE MAKING.
- 223—APPAREL APPARATUS.

43. **MISCELLANEOUS STRUCTURE.** Structure of general utility which may be considered analogous to the class and which does not fall within the scope of any of the subclasses or within any other class. Such structure is often of a non-homogeneous rigid nature built up largely of a combination of plastic and other materials. Patents for structure for definite articles should not be placed here, but should be classified in the article class.

44. **HEAT INSULATING COVERINGS.** Miscellaneous coverings for preventing transmission of heat not elsewhere classifiable.

Search Classes—

- 154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclasses 27, Heat insulating covering making, and 29, Yielding fabric making.
- 38—FELT AND FUR, subclass 7, Fabrics.
- 62—REFRIGERATION, especially subclasses 10, Refrigerators, and 23, Heat insulated receptacles.
- 65—KITCHEN AND TABLE ARTICLES, subclass 53, Trays.
- 72—MASONRY AND CONCRETE STRUCTURES, subclasses 45, Walls, Block, Fiber, and 91, Smoke flues, Lined.
- 106—PLASTIC COMPOSITIONS, subclass 18, Heat insulating, and the subclasses thereunder.
- 103—SAFES, subclass 2, Fireproof.
- 110—FURNACES, subclass 97, Furnace structure, Baffles and heat retainers.
- 126—STOVES AND FURNACES, subclasses 87, Stoves, Heating, Liquid or gaseous fuel, Gas, Open front, Asbestos firebrick; 144, Fire pots and linings, and 221, Stove lids and tops, Stove mats.
- 137—WATER DISTRIBUTION, subclass 72, Mains and pipes, Thawing.

CLASS 154—Continued.

45. HEAT INSULATING COVERINGS, AIR-SPACED. Coverings provided with chambers or cavities for confining dead air or the like. The chambers may be either within the body of the material or between it and the article covered thereby.

Search Class—

- 72—MASONRY AND CONCRETE STRUCTURES, subclass 41, Walls, Block, Hollow.

46. FABRICS. Flexible fabric structures *per se*, either of a laminated or other nature when not classifiable in any other art. Fabrics of special shape, as distinguished from stock fabrics, are not included unless within the scope of some particular subclass definition. Nor are simple fabrics merely coated or impregnated.

Search Classes—

- 154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, the "Heat insulating coverings" subclasses, for heat insulating fabrics.
2—APPAREL, subclasses 80, Body garments, Lap robes, and 131, Nether garments, Napkins.
20—WOODEN BUILDINGS, subclass 90, Composite boards, for laminated sheets built up until they are quite rigid or of a shape-retaining nature to produce a substitute for lumber.
72—MASONRY AND CONCRETE STRUCTURES, subclass 124, Plaster boards, if prepared of plastic material as a substitute for plaster.
36—BOOTS, SHOES, AND LEGGINGS, subclasses 9, Felt and fabric, and 44, Soles, Insoles, Laminated.
101—PRINTING, subclass 107, Press copying, Damping.
128—SURGERY, subclass 3, Bandages.
150—CLOTH, LEATHER, AND RUBBER RECEPTACLES.
167—MEDICINES, subclass 8, Plasters.
173—ELECTRICITY, CONDUCTORS, subclass 320, Insulators, Insulating fabrics, for electric insulating fabrics.
190—BAGGAGE, subclass 53, Traveling bags, Materials and patterns.
198—MATRIX MAKING, subclass 7, Matrices and materials.
229—PAPER RECEPTACLES, especially subclasses 55, Bags, Reinforced, and 87, Wrappers.

47. FABRICS, DECORATIVE. Decorative fabrics, such as wall coverings and the like, when the invention involves laminated or other features not otherwise provided for.

48. FABRICS, ELASTIC. Elastic fabrics, such as used for shoe gores and the like, adapted to stretch particularly in the plane of the fabric, and not elsewhere classifiable.

Search Classes—

- 2—APPAREL, subclass 16, Trimmings, Plaited.
28—CORDAGE, subclass 25, Braids.
36—BOOTS, SHOES, AND LEGGINGS, subclass 51, Uppers, Closures, Elastic.
66—KNITTING AND NETTING, subclass 4, Fabrics.
139—WEAVING, subclass 70, Fabrics, Elastic.

49. FABRICS, FLOOR. Floor coverings not classifiable in other arts. Tiles of any material, whether for floor or other purposes, are excluded.

Search Classes—

- 154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 20, Linoleum making, and the subclasses thereunder.
20—WOODEN BUILDINGS, subclass 75, Mosaic and inlaying, for tiles.
72—MASONRY AND CONCRETE STRUCTURES, subclass 18, Walls, Faced, Tile, and the subclasses thereunder, for tiles.
106—PLASTIC COMPOSITIONS, subclass 7, Floor cloth, for compositions for building up floor coverings of a linoleum-like nature.

50. FABRICS, WATERPROOF. Miscellaneous waterproof fabrics. Does not include heavy fabric, such as "Wear and strain resisting."

Search Classes—

- 2—APPAREL, subclass 32, Head coverings, Hats, Sweats.

CLASS 154—Continued.

- 36—BOOTS, SHOES, AND LEGGINGS, subclasses 4, Rubber, and 5, Rubber, Overshoes.

- 229—PAPER RECEPTACLES, subclasses 5, Vessels, Liquid proofed and 14, Boxes, Lined.

51. FABRICS, WATERPROOF, ROOFING. Fabrics designed for roofing or weatherproof building purposes.

Search Classes—

- 154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclasses 28, Fabric coating and uniting, Webs, Roofing, and 39, Fabric coating and uniting, Webs, Roofing, Sanding feature.
106—PLASTIC COMPOSITIONS, especially subclasses 12, Electrical insulating, and the subclasses thereunder, and 31, Artificial stone, Bituminous and resinous, and the subclasses thereunder.
108—ROOFS, subclass 7, Fabrics, for roofing fabrics of modified form to enable them to be joined or attached and methods of applying the fabric to the roof.

52. FABRICS, WEAR AND STRAIN RESISTING. Fabrics of a flexible, usually composite, nature embodying considerable toughness and strength, usually built up from textile, adhesive, and plastic materials. These fabrics are suitable as stock for belts, hose, tire treads, and the like.

Search Classes—

- 36—BOOTS, SHOES, AND LEGGINGS, subclass 30, Soles, Laminated.
74—MACHINE ELEMENTS, subclass 63, Belts, Laminated.
101—PRINTING, subclass 113, Printing couple appliances, Blankets.
121—STEAM ENGINES, subclass 107, Packing.
137—WATER DISTRIBUTION, subclass 90, Mains and pipes, Hose.
152—RESILIENT TIRES AND WHEELS.
169—FABRIERY, subclass 28, Sole pads, Elastic.

53. FABRICS, WIRE REINFORCED. Flexible fabrics not otherwise classified having wire reinforcement.

Search Class—

- 101—PRINTING, subclass 113, Printing couple appliances, Blankets.

54. FABRICS, YIELDING. Miscellaneous fabrics of the carpet lining and packing type, usually yieldable in a direction transverse to the plane of the fabric, not elsewhere classifiable.

Search Classes—

- 154—LAMINATED FABRICS AND ANALOGOUS MANUFACTURES, subclass 29, Yielding fabric making.
5—BEDS, subclasses 3, Bed clothing, and 13, Mattresses.
19—CARDING, subclass 10, Wadding.
36—BOOTS, SHOES, AND LEGGINGS, subclass 44, Soles, Insoles, Laminated.
38—FELT AND FUR, subclass 7, Fabrics.
54—HARNESS, subclass 41, Saddles, Harness, Cushions.
66—KNITTING AND NETTING, subclass 4, Fabrics.
133—COIN HANDLING, subclass 12, Receptacles, Mats and Trays.
155—CHAIRS, subclass 43, Upholstery.
229—PAPER RECEPTACLES, subclasses 89, Wrappers, Bottle, and 91, Wrappers, Bottle, Padded.

55. FABRICS, YIELDING, CORRUGATED AND INDENTED. Yielding fabrics formed with ridges and indentations.

Search Classes—

- 154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 30, Yielding fabric making, Corrugating and indenting.
229—PAPER RECEPTACLES, subclass 90, Wrappers, Bottle, Corrugated.

56. FABRICS, YIELDING, STAIR PADS. Yielding fabric especially designed for use under stair carpets.

Search Class—

- 20—WOODEN BUILDINGS, subclass 79, Stair covers, for stair covers to be used without carpets.

CLASS 157.—WHEELWRIGHT-MACHINES.

DEFINITIONS.

Class.

This class includes means for assembling wheels not specifically provided for elsewhere.

Subclasses.

1. MISCELLANEOUS. Devices not elsewhere classifiable for assembling wheels.
Note.—Clamps for holding wooden rims in shape while the spokes are being set up are included, except when accompanied by devices for screwing up the spoke-nipples. Such devices are found in class 81, TOOLS, subclass 53, Wrenches, and subclasses thereunder.
2. RIM-COMPRESSORS. Devices for compressing wheel-rims to force fellies in place, etc.
Note.—Machines for causing the metal of the tire to flow and hence tighten the tire are found in class 78, METAL FORGING AND WELDING, subclass 55, Forging, Tire upsetting.
3. SPOKE-SETTERS. Devices for guiding and forcing spokes into hubs.
Search Class—
78—METAL FORGING AND WELDING, subclass 16, Forging, Power hammers and presses, Spoke securing, for machines for riveting metal spokes to hubs and rims.
4. SPOKE-SETTERS, WORK-HOLDERS AND GUIDES. Supports for holding the hub and guiding the spoke while it is being driven.
Search Class—
144—WOODWORKING, subclass 206, Tenon turning, Wheel spoke.

CLASS 157—Continued.

5. TIRE-SETTERS. Devices for forcing tires on wheel-rims.
Search Class—
78—METAL FORGING AND WELDING, subclass 55, Forging, Tire upsetting, for devices for upsetting tires.
6. TIRE-SETTERS, RUBBER TIRES. Apparatus for seating and mechanically securing elastic tires, usually solid-rubber tires, on wheel-rims.
7. TIRE-SETTERS, TRESTLES AND TANKS. Trestles on which the wheel is mounted in combination with tanks into which the wheel or wheel-rim can be dipped to cool the tire.
8. TIRE-TIGHTENERS. Removable devices for tightening tires without affecting the construction of the wheel.
Search Class—
21—CARRIAGES AND WAGONS, for devices for the same purpose which form permanent parts of wheels.
9. TIRE-TIGHTENERS, FELLY-EXPANDERS. Removable jacks for tightening tires by expanding the fellies against the tire.
10. TIRE-TIGHTENERS, FELLY-EXPANDERS, SPOKE-CLAMPING. Fellies are expanded by a jack which is clamped to a spoke.
11. TIRE-REMOVERS. Presses for forcing tires off of wheel-rims.
12. SPOKE-EXTRACTORS. Devices for pulling spokes or spoke-tenons out of hubs.
Search Classes—
29—METAL-WORKING, subclass 84, Assembling, and subclasses thereunder.
145—WOODWORKING TOOLS, subclass 41, Nail-extractors, Nut and screw lifters.
13. ABOLISHED.



CLASS 158.—LIQUID AND GASEOUS FUEL BURNERS.

DEFINITIONS.

Class.

This class relates to burners and their accessories that are designed to use liquid or gaseous fuel and that are primarily employed in the production of heat for industrial or domestic purposes.

This class also includes devices for producing gas of the liquid retort type, where the burner and retort are intimately related and the gas produced is simultaneously used without preliminary purification, fixation, or storage.

Class 48, GAS, HEATING AND ILLUMINATING, deals with devices for the production of heating and illuminating gas produced from liquid or solid fuel and that are not specifically defined as belonging to class 158.

For retort structures generally search should be made in appropriate subclasses under subclass 37, Liquid fuel, Burners, Vapor, in class 67, ILLUMINATING BURNERS.

The lines between classes 158, LIQUID AND GASEOUS FUEL BURNERS, and 67, ILLUMINATING BURNERS, depend upon whether the devices are intended or structurally designed for heating or illuminating purposes, and the subclasses in both classes are arranged on parallel lines so far as possible.

This class also includes devices relating to the method or art of feeding liquid fuel to heating and illuminating burners. The class does not include those devices that are especially adapted to feed carburetors, those where the feed is controlled by pressure generated in a retort or steam-boiler, the invention residing in the controlling mechanism, classified in class 236, DAMPERS, AUTOMATIC, and those which are structurally related to gas engines, class 123, INTERNAL-COMBUSTION ENGINES, subclass 119, Charge-forming devices, and the subclasses thereunder.

This class includes also self-heating tools appropriately divided under type subclasses.

This class includes also furnaces that are structurally designed or adapted to the burning of liquid or gaseous fuel.

This class includes fire-kindlers of the liquid or gaseous fuel type.

This class also includes types of burners that are in the nature of attachments designed for use in connection with coal-stoves, also burners of "grate form" adapted to the burning of liquid or gaseous fuel or coal.

Liquid or gaseous fuel burners which are adapted to be used in connection with solid-fuel furnaces to assist in completing combustion are found in class 110, FURNACES.

Subclasses.

1. FURNACES. Furnaces adapted to the burning of liquid or gaseous fuel not otherwise classifiable.
2. FURNACES, COMBINED DOOR AND BURNER. Devices in which the burner is attached to the door or movable front plate of a furnace, whereby the burner is readily removed from its operative position relative to the furnace. This is a type subclass, the burner features being cross-referenced into appropriate subclasses.
3. FURNACES, LOCOMOTIVE TYPE. Furnaces in which there is some modification of the fire-box of a locomotive type of furnace to adapt it to the use of liquid or gaseous fuel.
4. FURNACES, LIQUID-FUEL. Furnaces that are specially designed or adapted to the use of liquid fuel and the burner in most instances is of the pan or tray type.
5. FURNACES, LIQUID-FUEL, RETORT. Liquid-fuel-burning furnaces in which a well-defined retort is employed in the furnace-chamber to vaporize the oil preliminary to its use in the burner employed.
6. FURNACES, LIQUID-FUEL, RETORT, GAS-MAKING. Liquid-fuel-burning furnaces in which the retort is capable of generating a larger volume of vapor or gas than is immediately employed, the surplus gas being employed at points remote from the generating-furnace.
Search Class—
48—GAS, HEATING AND ILLUMINATING, appropriate subclasses.
7. FURNACES, GAS. Furnaces that are specially designed or adapted to the use of gaseous fuel.
8. COAL-STOVE ATTACHMENTS. Liquid and gaseous fuel burners that are structurally designed to adapt them to coal-burning-stove structures, either heating or cooking.
9. COAL-STOVE ATTACHMENTS, LID-BURNERS. Liquid and gaseous fuel burners designed and adapted to be supported in the ordinary stove-lid opening.
10. FIRE-KINDLERS. Liquid and gaseous fuel burners designed to be employed in kindling fires in the various types of stoves, furnaces, boiler-furnaces, and locomotives.

CLASS 158—Continued.

11. COMBINED OIL AND GASEOUS FUEL. Burners that are specially designed or adapted to burn either liquid or gaseous fuel.

Search Class—

67—ILLUMINATING BURNERS, subclass 2, Combined gas and vapor.

12. COMBINED GAS AND COAL. Combined grate, fire-pot, and burners that are by their structure adapted to burn liquid, gaseous, or solid fuel, both at the same time or separately, as desired.

Search Class—

110—FURNACES, subclass 22, Furnace structure, Gas or oil and solid fuel.

13. COMBINED GAS AND WATER VAPORIZERS. Liquid and gaseous fuel burners provided with integral means for generating water-vapor to be commingled with the flame products.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 93, Burners, Liquid-fuel, Pan or tray, Water-surface, and 95, Burners, Liquid-fuel, Lamp type, Water-vaporizers.

- 13.5. COMBINED BURNER AND BLOWPIPE. Liquid or gaseous fuel burners combined with blowpipes external thereto for projecting a blast of fluid such as air, steam, gas, etc., against the flame. They are generally hand torches.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 34, Burners, Liquid fuel, Blast lamp, Hand torches, Automatic blow-pipe.

14. SELF-HEATING TOOLS, BRANDING-IRONS. Branding-irons that contain heating means of the liquid or gaseous fuel form and that do not fall under specific subclasses.

15. SELF-HEATING TOOLS, BRANDING-IRONS, GAS. Self-heating branding-irons the construction of which is adapted to the burning of gas.

16. SELF-HEATING TOOLS, BRANDING-IRONS, HYDRO-CARBON-RESERVOIR. Self-heating branding-irons that are provided with liquid-fuel-holding receptacles, usually in the handle, for supplying fuel to the heating-burners.

17. SELF-HEATING TOOLS, BURNING-TOOLS. Burning-tools that contain self-heating means and that do not fall under specific subclasses. The tools are employed in the burning of wood and other substances.

18. SELF-HEATING TOOLS, BURNING-TOOLS, GAS. Self-heating burning-tools the construction of which is adapted to the burning of gas.

19. SELF-HEATING TOOLS, BURNING-TOOLS, HYDRO-CARBON-RESERVOIR. Self-heating burning-tools that are provided with liquid-holding receptacles for supplying fuel to the heating-burner.

20. SELF-HEATING TOOLS, CURLING-IRONS. Self-heating curling-irons that do not fall under a specific subclass.

21. SELF-HEATING TOOLS, CURLING-IRONS, HYDRO-CARBON-RESERVOIR. Self-heating curling-irons that are provided with means to utilize liquid fuel as a heating agent. In some instances the handle is hollow and contains the liquid fuel, while in others the curling-iron is hollow and filled with a liquid-saturated absorbent substance.

22. SELF-HEATING TOOLS, ROLL-HEATING TYPE. Burners that by their structure are adapted to the heating of ironing-rolls, burnishing-machines, and similar structures.

Search Class—

158—LIQUID OR GASEOUS FUEL BURNERS, subclass 23, Self-heating tools, Sad-irons.

23. SELF-HEATING TOOLS, SAD IRONS. Miscellaneous sad irons that are structurally adapted to the use of liquid or gaseous fuel.

Search Classes—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 22, Self-heating tools, Roll heating type.

68—LAUNDRY, subclass 26, Sad irons.

- 23.1. SELF-HEATING TOOLS, SAD IRONS, GAS. Sad irons that are structurally adapted to the use of gaseous fuel.

- 23.2. SELF-HEATING TOOLS, SAD IRONS, HYDRO-CARBON RESERVOIR. Sad irons that are structurally adapted to the use of liquid fuel and that are provided with attached liquid fuel reservoirs.

CLASS 158—Continued.

24. SELF-HEATING TOOLS, SOLDERING-IRONS. Self-heating soldering-irons that do not fall under specific subclasses.
25. SELF-HEATING TOOLS, SOLDERING-IRONS, SOLDER-FEDERS. Self-heating soldering-irons that are provided with solder-reservoirs. The means employed for heating the iron also keeps the solder contained in the reservoir in a molten state.
26. SELF-HEATING TOOLS, SOLDERING-IRONS, GAS. Self-heating soldering-irons or coppers that are provided with an internal gas-chamber, air-inlets, and flame or burner outlets, the construction being adapted to the burning of gas.
27. SELF-HEATING TOOLS, SOLDERING-IRONS, HYDRO-CARBON-RESERVOIR. Self-heating soldering irons or coppers that are provided with liquid-fuel-holding receptacles, usually in the handle, for supplying fuel to the heating-burner.

28. BURNERS, LIQUID-FUEL. Burners adapted to the burning of liquid fuel that are not classifiable under specific subclasses.

29. BURNERS, LIQUID-FUEL, AUTOMOBILE. Liquid-fuel burners that are especially designed for use on automobiles and include means for vaporizing the oil. They are equally applicable to steam-boiler structures.

Note.—For specific forms of retort or vaporizing structures search should be made in appropriate subclasses under Retorts, this class.

30. BURNERS, LIQUID-FUEL, AUTOMOBILE, GAS-CHAMBER. Liquid-fuel automobile-burners that are provided with upper and lower plates, forming what is termed a "gas-chamber." The upper plate is provided with gas or burner openings.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, Subclass 110. Burners, Gas, Concentric gas and air jet.

31. BURNERS, LIQUID-FUEL, AUTOMOBILE, STARTERS. Devices of the retort type that are especially related to and designed to initially heat or start automobile-burners.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, Subclass 81, Burners, Liquid-fuel, Retort, Starters, and the subclasses thereunder.

32. BURNERS, LIQUID-FUEL, BLAST-LAMP. Devices in which the burner, usually of the retort type, is supported upon the oil tank or reservoir, the heat of the burner when in operation maintaining the pressure in the reservoir whereby the oil is forced to the burner.

33. BURNERS, LIQUID-FUEL, BLAST-LAMP, HAND-TORCHES. Devices of the breamer type designed to project a flame against an object or surface to be heated. The means employed to force oil to the burner, which is usually of the retort type, is either compressed air, gas generated in the reservoir by the heat of the burner, or gravity oil-feed.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 53, Liquid Fuel, Retort, and the subclasses thereunder, for retort features; also subclasses 50.1, Burners, Liquid fuel, Fuel feeding, Tanks, Force feed, Gas; 50.2, Burners, Liquid-fuel, Fuel-feeding, Tanks, Force Feed, Liquid; and 50.3, Burners, Liquid-fuel, Fuel-feeding, Tanks, Force feed, Mechanical, for reservoir features.

34. BURNERS, LIQUID-FUEL, BLAST-LAMP, HAND-TORCHES, AUTOMATIC BLOWPIPE. Forms of hand-torch which are provided with an automatic "blowpipe"—viz., a gas or steam generating chamber, a tube leading from it and projecting a blast against the flame. The flame is also the heating means for the chamber.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 13.5, Combined burner and blowpipe.

35. BURNERS, LIQUID-FUEL, BLAST-LAMP, HAND-TORCHES, WICK TYPE. Hand-torches in which the oil is fed to the burner-retort through the medium of a wick.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 72, Burners, Liquid-fuel, Retort, Wick-feed.

36. BURNERS, LIQUID-FUEL, FUEL-FEEDING. Devices where the invention resides in the means employed for supplying or feeding liquid fuel to a heating or lighting burner (mainly systems) and that do not fall under specific subclasses.

Search Classes—

48—GAS, HEATING AND ILLUMINATING, appropriate subclasses.
123—INTERNAL-COMBUSTION ENGINES, subclass 119, Charge-forming devices, and the subclasses thereunder.

37. BURNERS, LIQUID-FUEL, FUEL-FEEDING, MAINTAINED OIL-LEVEL. Fuel-feeding devices that are provided with means for automatically maintaining an oil-level in the burner chamber or reservoir and that do not fall under specific subclasses.

38. BURNERS, LIQUID-FUEL, FUEL-FEEDING, MAINTAINED OIL-LEVEL, FLOAT-CONTROLLED. Maintained-oil-level devices in which the supply of oil to the burner-chamber is governed through the medium of a float-controlled valve.

CLASS 158—Continued.

Search Classes—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 120, Valves and cleaners.

48—GAS, HEATING AND ILLUMINATING, subclass 155.1, Carburizers, Atomizers, Constant level.

123—INTERNAL-COMBUSTION ENGINES, subclass 132, Charge-forming devices, Atomizers, Constant level.

39. BURNERS, LIQUID-FUEL, FUEL-FEEDING, MAINTAINED OIL-LEVEL, FLOAT-CONTROLLED, LIQUID-SEAL. Devices for maintaining the oil-level in the burner supply-chamber through the medium of a float operating upon a cup containing a sealing liquid which regulates or controls the oil-supply.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 43, Burners, Liquid-fuel, Fuel-feeding, Liquid-seal.

40. BURNERS, LIQUID-FUEL, FUEL-FEEDING, MAINTAINED OIL-LEVEL, FOUNTAIN-FEED. Maintained-oil-level devices wherein a liquid-fuel supply to a burner is maintained at a predetermined level by means of a receptacle, the outlet to which is sealed or unsealed by the rise or fall of the liquid-level.

41. BURNERS, LIQUID-FUEL, FUEL-FEEDING, MAINTAINED OIL-LEVEL, FOUNTAIN-FEED, REMOVABLE FONT, CUT-OFF. Devices where the liquid-fuel supply to a burner-chamber is automatically maintained at a predetermined or constant level by a fountain-feed, a removable tank or reservoir, the outlet to which is opened by positive means and closed automatically when removed for refilling.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 48, Burners, Liquid-fuel, Fuel-feeding, Tanks, Burner cut-off, and 49, Burners, Liquid-fuel, Fuel-feeding, Tanks, Burner cut-off, Retracting Pump.

42. BURNERS, LIQUID-FUEL, FUEL-FINDING, MAINTAINED OIL-LEVEL, VERTICALLY-ADJUSTABLE BURNER OR TANK. Devices wherein a liquid-fuel supply to a burner-chamber is maintained at a predetermined or constant level by means of the vertical adjustment of the oil tank or burner, the one adjustable relative to the other.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 86, Burners, Liquid-fuel, Perforated combustion-tube.

43. BURNERS, LIQUID-FUEL, FUEL-FEEDING, LIQUID-SEAL. Fuel-feeding devices in which a liquid seal, water, or non-inflammable liquid is placed between the reservoir and the burner.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 39, Burners, Liquid-fuel, Fuel-feeding, Maintained oil-level, Float-controlled, Liquid-seal.

44. BURNERS, LIQUID-FUEL, FUEL-FEEDING, LAMP-STOVE TYPE, RESERVOIR. Devices wherein the improvements reside in the oil-holding fonts or chambers of lamp or wick stoves.

45. BURNERS, LIQUID-FUEL, FUEL-FEEDING, LAMP-STOVE TYPE, RESERVOIR, PROTECTOR AND AIR-FEEDING. Devices wherein the improvements reside in the means placed between the oil font or reservoir and the burner to prevent overheating, the means being in the form of a water or air chamber. As a rule the air from the air-chamber or the vapor from the water-chamber is fed to the burner-flame to aid combustion.

46. BURNERS, LIQUID-FUEL, FUEL-FEEDING, TANKS. Devices where the improvements reside in the structural feature of the tank or reservoir and that do not fall under specific subclasses. Tanks that are provided with refilling safety devices other than those specifically classified in subclasses 41, 44, 48, and 49 of this class are classified in this subclass.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 41, Burners, Liquid-fuel, Fuel-feeding, Maintained oil-level, Fountain-feed, Removable font, Cut-off; 44, Burners, Liquid-fuel, Fuel-feeding, Lamp-stove type, Reservoir; 48, Burners, Liquid-fuel, Fuel-feeding, Tanks, Burner cut-off, and 49, Burners, Liquid-fuel, Fuel-feeding, Tanks, Burner cut-off, Retracting pump, also 67, ILLUMINATING BURNERS, subclass 81, Liquid fuel, Fonts.

46.5. BURNERS, LIQUID FUEL, FUEL FEEDING, TANKS, RESERVE SUPPLY. Liquid fuel feeding devices where the invention resides in means which prevent more than a predetermined portion of the total fuel to be consumed at one time. The purpose may be to provide a time feed, to prevent the flame from coming into contact with the main body of fuel or to reserve an emergency supply to maintain the feed until the main supply can be renewed.

Note.—This subclass does not include devices wherein a mechanical flame extinguisher of a wick burner is operated by a float in the font. Such devices are classified in class 67, ILLUMINATING BURNERS, subclass 74, Liquid fuel, Burners, Extinguishers, Fuel exhaustion.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 84, Burners, Liquid fuel, Starters, Lighting cup, Oil charge measuring.

CLASS 158—Continued.

47. **BURNERS, LIQUID-FUEL, FUEL-FEEDING, TANKS, COMBINED OIL AND GAS.** Devices where the invention resides in the combination of a liquid-fuel tank, burner, means for conducting the liquid to the burner, means for conveying a gas to the burner, usually carbureted air, from the tank, and elements specially adapted structurally to carry into effect such connection.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 36, Burners, Liquid-fuel, Fuel-feeding; 50.1, Burners, Liquid fuel, Fuel feeding, Tanks, Force feed, Gas; and 81, Burners, Liquid-fuel, Retort, Starters.

48. **BURNERS, LIQUID-FUEL, FUEL-FEEDING, TANKS, BURNER CUT-OFF.** Liquid-fuel-holding tanks that are provided with means for extinguishing the flame by cutting off the oil-supply preliminary to the filling of the tank. In this subclass are placed those devices known in the art as "lay-down tanks."

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 40, Burners, Liquid-fuel, Fuel-feeding, Maintained oil-level, Fountain-feed, and 41, Burners, Liquid-fuel, Fuel-feeding, Maintained oil-level, Fountain-feed, Removable font, Cut-off.

49. **BURNERS, LIQUID-FUEL, FUEL-FEEDING, TANKS, BURNER CUT-OFF, RETRACTING PUMP.** Devices for withdrawing the oil from the bowl or retort of burners upon the extinguishment of the burner-flame.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 84, Burners, Liquid-fuel, Retort, Starters, Lighting-cup, Oil-charge measuring.

50. **ABOLISHED.**

- 50.1. **BURNERS, LIQUID FUEL, FUEL FEEDING, TANKS, FORCE FEED, GAS.** Independent liquid fuel holding tanks or reservoirs in which the oil contained therein is under pressure, the means employed being a gas, generally air.

- 50.2. **BURNERS, LIQUID FUEL, FUEL FEEDING, TANKS, FORCE FEED, LIQUID.** Includes independent liquid fuel holding tanks or reservoirs in which the oil contained therein is under pressure, the means employed being liquid, generally water.

- 50.3. **BURNERS, LIQUID FUEL, FUEL-FEEDING, TANKS, FORCE FEED, MECHANICAL.** Independent liquid fuel holding tanks or reservoirs in which the oil contained therein is under pressure, the means employed being mechanical, such as a piston or diaphragm driven by a weight, spring, or float.

51. **BURNERS, LIQUID-FUEL, FUEL-FEEDING, TANKS, SIPHON-FEED.** Liquid fuel-holding tanks or reservoirs in which the oil is siphoned therefrom and means for controlling the flow of the oil, thereby effecting a uniform supply at the point of use.

52. **BURNERS, LIQUID-FUEL, FUEL-FEEDING, TANKS, DROP-FEED.** Oil-feeding devices where the invention resides in the means employed to provide a steady and even flow of oil from a tank drop by drop and graduating the flow to any desired degree.

53. **BURNERS, LIQUID-FUEL, RETORT.** Devices in which gas or vapor is generated in a closed chamber or tube, from which it is fed to a burner or burners, and that do not fall under retort-type subclasses. The gas or vapor generated in devices of this class is in such a condition as to render its immediate use necessary or desirable and differs from the character of gas generated in the type of retort classified under appropriate subclasses in class 48, GAS, HEATING AND ILLUMINATING, in that no means are employed for making a fixed gas or for storing the same.

Search Classes—

158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 5, Furnaces, Liquid-fuel, Retort; 22, Self-heating tools, Roll-heating type; and 23, Self-heating tools, Sad-irons.

48—GAS, HEATING AND ILLUMINATING for retort structures *per se*

67—ILLUMINATING BURNERS, subclass 37, Liquid fuel, Burners, Vapor, and the subclasses thereunder.

54. **BURNERS, LIQUID-FUEL, RETORT, SUPERHEATING.** Combined heating-burner and retort devices that are provided with means for superheating the gas or vapor generated in the retort in advance of its delivery to the flame-point or burner proper, the form, character, and relation of the retort to the burner not being considered.

55. **BURNERS, LIQUID-FUEL, RETORT, SUPERHEATING, BURNER-CAP.** Superheating-burners that are provided with well-defined burner-caps.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 116, Burners, Gas, Burner-caps for burner-cap features.

56. **BURNERS, LIQUID-FUEL, RETORT, OIL, STEAM, OR WATER.** Retort devices in which oil and steam or water are retorted and mixed to form a gas or vapor. The retort may have separate oil and water generating chambers, the mixing taking place between the retort and burner, or the retort may have a single chamber into which the oil, steam, or water is introduced and retorted, the gas or vapor in each instance being fed to a burner or burners.

CLASS 158—Continued.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, appropriate Retort subclasses for specific forms of retort and also subclasses 61, Burners, Liquid-fuel, Retort, Auxiliary heater, and 62, Burners, Liquid-fuel, Retort, Auxiliary heater, Subburner.

57. **BURNERS, LIQUID-FUEL, RETORT, OIL, STEAM, OR WATER, STEAM-JET.** Devices of the separate retort-chamber type and provided with means for discharging the superheated steam or water-gas into the oil or gas flame. In some instances the superheated steam is also admitted to the oil-gas-generating retort-chamber.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, Retort subclasses and subclass 92, Burners, Liquid-fuel, Pan or tray, Steam or air spray.

58. **BURNERS, LIQUID-FUEL, RETORT, ADDITIONAL CARBURETER.** Devices in which a burner-heated gas or vapor generating retort supplies vapor to a carbureter. The gas or vapor from the carbureter may be supplied to heating or illuminating burners. The retort-heating burner may be supplied with vapor or gas from the retort or the mixed gas from the carbureter.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 6, Furnaces, Liquid-fuel, Retort, Gas-making; 61, Burners, Liquid-fuel, Retort, Auxiliary heater; and 62, Burners, Liquid-fuel, Retort, Auxiliary heater, Subburner.

59. **BURNERS, LIQUID-FUEL, RETORT, ADDITIONAL CARBURETER, CENTRAL GENERATOR.** Retort-burners, usually employed and designed for use in cooking-stoves, in which there is a main or central generating-burner and one or more non-generating burners grouped about the central generating-burner. The central generating-burner provides vapor for itself and the non-generating burner or burners.

60. **BURNERS, LIQUID-FUEL, RETORT, MOVABLE VAPOR-DEFLECTOR.** Retort-burners in which means are employed to deflect the vapor or flame from the main-burner induction, or commingling tube upon the retort for the purpose of keeping the burner ready for instant use. The deflector may be a part of the induction or commingling tube or be an independent one, having no structural relation to the tube other than that of a deflector.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 61, Burners, Liquid-fuel Retort, Auxiliary heater; 62, Burners, Liquid-fuel, Retort, Auxiliary heater, subburner; 71, Burners, Liquid-fuel, Retort, Side retort; and 81, Burners, Liquid-fuel, Retort, Starters.

61. **BURNERS, LIQUID-FUEL, RETORT, AUXILIARY HEATER.** Retort-burners in which a subsidiary flame is maintained at all times during the working of the main burner and designed to heat the main or burner retort. A single valve controls the burner and subsidiary flame.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 62, Burners, Liquid-fuel, Retort, Auxiliary heater, Subburner; 71, Burners, Liquid-fuel, Retort, Side retort; 72, Burners, Liquid-fuel, Retort, Wick-feed; and 82, Burners, Liquid-fuel, Retort, Starters, Continuously-operated.

62. **BURNERS, LIQUID-FUEL, RETORT, AUXILIARY HEATER, SUBBURNER.** Burners in which there is a retort to supply vapor to a main-burner flame, and a supplemental burner supplied with vapor from the retort designed to heat said retort. The heating or subburner is controlled by a valve independent of the main-burner valve, thereby rendering it capable of joint or independent use as respects the main burner.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 31, Burners, Liquid-fuel, Automobile, Starters, and 82, Burners, Liquid-fuel, Retort, Starters, Continuously-operated.

63. **BURNERS, LIQUID-FUEL, RETORT, OVERLYING.** Devices of the heating-burner and retort type in which the gas or vapor generating chamber or retort overlies the gas or vapor flame.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 23, Self-heating tools, Sad-irons.

64. **BURNERS, LIQUID-FUEL, RETORT, OVERLYING, MIXING-CHAMBER.** Devices of the heating-burner and retort type, the vaporizing chamber or retort overlying the gas or vapor flame and a well-defined gas or vapor and air mixing chamber behind the flame-point.

65. **BURNERS, LIQUID-FUEL, RETORT, OVERLYING, MIXING-CHAMBER, BURNER-CAP.** Devices of the heating-burner and retort type having a vaporizing chamber or retort overlying the gas or vapor flame, a well-defined gas or vapor and air mixing chamber, and a burner-cap in connection therewith.

66. **BURNERS, LIQUID-FUEL, RETORT, UNDERLYING.** Devices of the heating-burner and retort type in which the gas or vapor generating chamber or retort underlies the gas or vapor flame.

CLASS 158—Continued.

67. **BURNERS, LIQUID-FUEL, RETORT, UNDERLYING, CONDUCTING-PLATE.** Devices of the heating-burner and underlying-retort type in which means are employed for conducting heat to the retort, said means being an integral or unitary part of the device.
68. **BURNERS, LIQUID-FUEL, RETORT, UNDERLYING, CONDUCTING-PLATE, MIXING-CHAMBER AND BURNER-CAP.** Burners of the heating-burner and underlying-retort type in which means are employed for conducting heat to the retort, a gas or vapor and air mixing chamber and burner-cap in connection therewith.
69. **BURNERS, LIQUID-FUEL, RETORT, UNDERLYING, MIXING-CHAMBER AND BURNER-CAP.** Burners of the heating-burner and retort type having a gas or vapor generator or retort underlying the burner-flame, a gas or vapor and air mixing chamber, and a burner-cap in connection therewith.
70. **BURNERS, LIQUID-FUEL, RETORT, UNDERLYING, MIXING-CHAMBER AND FLAME-DEFLECTOR.** Burners of the heating-burner and retort type having a gas or vapor generator or retort underlying the burner-flame, a gas or vapor and air mixing chamber, and a flame-deflector plate located above or over the gas and air mixing chamber.
- Search Class—**
158—LIQUID AND GASEOUS FUEL BURNERS, subclass 113, Burners, Gas, Flame-deflectors.
71. **BURNERS, LIQUID-FUEL, RETORT, SIDE RETORT.** Burners of the heating-burner and retort type in which the gas or vapor generating retort is located at one side of the burner and means for deflecting a portion of the flame against said retort.
- Search Class—**
158—LIQUID AND GASEOUS FUEL BURNERS, subclass 60, Burners, Liquid-fuel, Retort, Movable vapor-deflector.
72. **BURNERS, LIQUID-FUEL, RETORT, WICK-FEED.** Burner-retort devices in which the liquid-fuel is fed to the retort through the medium of a wick. The means for starting or heating the retort may be an integral part of the device or independent of it.
- Search Classes—**
158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 35, Burners, Liquid-fuel, Blast-lamp, Hand-torches, Wick type; and 97, Burners, Liquid-fuel, Absorbent, Alcohol-lamp.
126—STOVES AND FURNACES, subclass 43, Stoves, Cooking, Liquor, or gaseous fuel, Liquid, Alcohol.
73. **BURNERS, LIQUID-FUEL, SPRAY.** Devices that are structurally designed to forcibly spray or inject atomized liquid fuel into the combustion-chamber of furnaces and that are not classifiable in designated subclasses. These devices are sometimes termed "injector-burners."
74. **BURNERS, LIQUID-FUEL, SPRAY, OIL, AIR, AND STEAM.** Spray-burners structurally designed to spray or inject oil, air, and steam into the combustion-chamber of a furnace, one of the elements being under pressure.
75. **BURNERS, LIQUID-FUEL, SPRAY, OIL AND STEAM.** Spray-burners structurally designed to spray or inject oil and steam into the combustion-chamber of a furnace, one of the elements being under pressure.
76. **BURNERS, LIQUID-FUEL, SPRAY, OIL AND AIR.** Spray-burners structurally designed to spray or inject oil and air into the combustion-chamber of a furnace, one of the elements being under pressure.
77. **BURNERS, LIQUID-FUEL, SPRAY, ATOMIZERS.** Spray or injector burners which are provided with specified mechanical means for breaking up or atomizing fuel elements—oil and air, oil, air, and steam, oil and steam.
- Search Class—**
158—LIQUID AND GASEOUS FUEL BURNERS, subclass 78, Burners, Liquid-fuel, Spray, End nozzles.
78. **BURNERS, LIQUID-FUEL, SPRAY, END NOZZLES.** Spray-burners in which the invention resides in the structural form of the discharge end or nozzle of the burner.
- Search Class—**
158—LIQUID AND GASEOUS FUEL BURNERS, subclass 77, Burners, Liquid-fuel, Spray, Atomizers.
79. **BURNERS, LIQUID-FUEL, RETORT, COIL.** Retort devices in which the retort or vaporizer is in the form of a coil and the burner-tip or vapor-outlet is in alignment with the axis of the coil.
80. **BURNERS, LIQUID-FUEL, RETORT, FILM.** Retorts which by reason of construction are adapted to vaporize light oils substantially instantaneously. The walls forming the retort are nearly in contact with each other or so near together as to leave space only for a thin film of liquid.
81. **BURNERS, LIQUID-FUEL, RETORT, STARTERS.** Devices wherein the invention resides in the means for initially heating or starting the burner-retort.
- Search Class—**
158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 31, Burners, Liquid-fuel, Automobile, Starters; 60, Burners, Liquid-fuel, Retort, Movable vapor-deflector; 71, Burners, Liquid-fuel, Retort, Side retort, and 72, Burners, Liquid-fuel, Retort, Wick-feed.

CLASS 158—Continued.

82. **BURNERS, LIQUID-FUEL, RETORT, STARTERS, CONTINUOUSLY-OPERATED.** Starting devices that may be kept in continuous operation when once started. The devices in this subclass differ from those in subclass 61, Burners, Liquid-fuel, Retort, Auxiliary heater, in that they are initial heaters or starters.
- Search Class—**
158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 31, Burners, Liquid-fuel, Automobile, Starters; 61, Burners, Liquid-fuel, Retort, Auxiliary heater; 62, Burners, Liquid-fuel, Retort, Auxiliary heater, Subburner, and 72, Burners, Liquid-fuel, Retort, Wick-feed.
83. **BURNERS, LIQUID-FUEL, RETORT, STARTERS, LIGHTING-CUP.** Initial heaters or starters that are in the form of open pans or cups adapted to contain oil and attached to some portion of the burner.
- Search Class—**
158—LIQUID AND GASEOUS FUEL BURNERS, subclass 90, Burners, Liquid-fuel, Perforated combustion-tube, Lighting arrangements.
84. **BURNERS, LIQUID-FUEL, RETORT, STARTERS, LIGHTING-CUP, OIL-CHARGE MEASURING.** Devices for supplying a regulated or fixed quantity of oil to the starter, which is usually of the lighting cup or pan form.
- Search Class—**
158—LIQUID AND GASEOUS FUEL BURNERS, subclass 49, Burners, Liquid-fuel, Fuel-feeding, Tanks, Burner cut-off, Retracting pump.
85. **BURNERS, LIQUID-FUEL, RETORT, LIGHTING AND RELIGHTING DEVICES.** Burner-retort devices in which there are a plurality of burners and means by which one or more burners may be lighted from the other in the first instance or relighted when accidentally extinguished.
- Search Classes—**
158—LIQUID AND GASEOUS FUEL BURNERS subclasses 10, Fire-kindlers, and 115, Burners, Gas Lighting devices.
67—ILLUMINATING BURNERS, subclass 9, Igniting devices, Lamp, and the subclasses thereunder.
86. **BURNERS, LIQUID-FUEL, PERFORATED COMBUSTION-TUBE.** Liquid-fuel burners which include an element having a perforated wall or walls, a space within which imperfect combustion takes place at the lower end and into which air is admitted to mix with the resulting gas, whereby a blue flame is produced at the discharge end of the tube.
- Search Class—**
158—LIQUID AND GASEOUS FUEL BURNERS, subclass 42, Burners, Liquid-fuel, Fuel-feeding, Maintained oil-level, Vertically-adjustable burner or tank.
87. **BURNERS, LIQUID-FUEL, PERFORATED COMBUSTION-TUBE, TROUGH.** Combustion-tube burners where the oil is vaporized or burned in a trough, in some instances called "firing-pan." It also includes those devices where the relation and arrangement of the trough to the combustion tube is claimed.
- Search Class—**
158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 81, Burners, Liquid-fuel, Retort, Starters; 83, Burners, Liquid-fuel, Retort, Starters, Lighting-cup; 91, Burners, Liquid-fuel, Pan or tray, and 96, Burners, Liquid-fuel, Absorbent.
88. **BURNERS, LIQUID-FUEL, PERFORATED COMBUSTION-TUBE, WICK.** Burners of the combustion-tube type in which the wick-chamber is specially adapted and constructed for use with a wick or where the combustion-tubes are so constructed as to be particularly adapted for use with a wick.
- Search Classes—**
158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 35, Burners, Liquid-fuel, Blast-lamp, Hand-torches, Wick type; 72, Burners, Liquid-fuel, Retort, Wick-feed; 81, Burners, Liquid-fuel, Retort, Starters; 83, Burners, Liquid-fuel, Retort, Starters, Lighting-cup, and 97, Burners, Liquid-fuel, Absorbent, Alcohol-lamp.
67—ILLUMINATING BURNERS, subclass 38, Liquid-fuel, Burners, Vapor, Blue flame wick type.
89. **BURNERS, LIQUID-FUEL, PERFORATED COMBUSTION-TUBE, COMBUSTION-TUBES.** Burners of the combustion-tube type where the invention resides in the form and arrangement of the perforated tubes forming the combustion-space.
- Search Class—**
158—LIQUID AND GASEOUS FUEL BURNERS, Combustion-tube subclasses.
90. **BURNERS, LIQUID-FUEL, PERFORATED COMBUSTION-TUBE, LIGHTING ARRANGEMENTS.** Burners of the combustion-tube type in which the invention resides in certain specified means for initially heating or lighting the burner, and usually the means employed lifts the combustion-section from the oil-burning section.
- Search Class—**
158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 81, Burners, Liquid-fuel, Retort, Starters, and 83, Burners, Liquid-fuel, Retort, Starters, Lighting-cup.
91. **BURNERS, LIQUID-FUEL, PAN OR TRAY.** Burners known in the art as the "open pan" or "tray" type, in which the flame at starting arises from the oil-surface, and is distinguished from the retort class in that there is not a distinct and well-defined retort for generating a gas to be fed to a burner or burners.

CLASS 158—Continued.

Search Classes—

- 158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 9, Coal-stove attachments, Lid-burners; 23, Burners, Liquid-fuel; 81, Burners, Liquid-fuel, Retort, Starters; 83, Burners, Liquid-fuel, Retort, Starters, Lighting-cup; 86, Burners, Liquid-fuel, Perforated combustion-tube, and 87, Burners, Liquid-fuel, Perforated combustion-tube, Trough.
- 126—STOVES AND FURNACES, subclass 93, Stoves, Heating, Liquid or gaseous fuel, Liquid.
- 240—Illumination.

92. BURNERS, LIQUID-FUEL, PAN OR TRAY, STEAM OR AIR SPRAY. Pan or tray burners in which a jet of steam or air is sprayed or forced over the oil-surface and mixed with the flame combustion.

Search Class—

- 158—LIQUID AND GASEOUS FUEL BURNERS, subclass 57, Burners, Liquid-fuel, Retort, Oil, steam, or water, Steam-jet.

93. BURNERS, LIQUID-FUEL, PAN OR TRAY, WATER-SURFACE. Liquid-fuel burners which have a contained body of water upon which the oil for combustion purposes is floated. This subclass also includes those devices where the oil is forced through a body of water, from the surface of which it is burned.

Search Class—

- 158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 13, Combined gas and water vaporizers, and 95, Burners, Liquid-fuel, Lamp type, Water-vaporizers.

94. BURNERS, LIQUID-FUEL, LAMP TYPE. Heating-burners of the wick type that do not involve vaporizing or retort features.

95. BURNERS, LIQUID-FUEL, LAMP TYPE, WATER-VAPORIZERS. Burners of the liquid-fuel lamp type that are provided with water-vaporizing means, the vapor being discharged into the flame combustion.

Search Class—

- 158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 13, Combined gas and water vaporizers, and 93, Burners, Liquid-fuel, Pan or tray, Water-surface.

6. BURNERS, LIQUID-FUEL, ABSORBENT. Liquid-fuel burners which employ an absorbent or porous substance from the surface of which combustion takes place. It includes what is known in the art as the "porous-block" type.

Search Class—

- 158—LIQUID AND GASEOUS FUEL BURNERS, subclass 97, Burners, Liquid-fuel, Absorbent, Alcohol-lamp.

97. BURNERS, LIQUID-FUEL, ABSORBENT, ALCOHOL-LAMP. Liquid-fuel burners of the absorbent type which are especially designed to burn alcohol, and they are usually provided with flame-controlling means. This class does not include alcohol-lamps of the wick-tube or "blowpipe" type.

Search Classes—

- 158—LIQUID AND GASEOUS FUEL BURNERS, subclass 72, Burners, Liquid-fuel, Retort, Wick-feed.
- 126—STOVES AND FURNACES, subclass 43, Stoves, Cooking, Liquid or gaseous fuel, Liquid, Alcohol.

98. ABOLISHED. See subclass 117.5.

99. BURNERS, GAS. Burners of the heating type adapted to the burning of gaseous fuel and that do not fall under a type subclass. It includes also patents in which the invention is solely in the burner, even though the gas or vapor is produced from liquid fuel.

Search Class—

- 67—ILLUMINATING BURNERS, subclass 87, Gaseous fuel burners, and the subclasses thereunder.

100. BURNERS, GAS, GAS-LOGS. Burners in the form of logs and usually coated with non-inflammable material.

Search Class—

- 126—STOVES AND FURNACES, subclasses 87, Stoves, Heating, Liquid or gaseous fuel, Gas, Open-front, Asbestos fireback; 88, Stoves, Heating, Liquid or gaseous fuel, Gas, Open front, Asbestos fireback, Hot air; 92, Stoves, Heating, Liquid or gaseous fuel, Gas, Incandescent fire-grate; 128, Fireplaces, Liquid or gaseous fuel, Asbestos fireback, and 129, Fireplaces, Liquid or gaseous fuel, Asbestos fireback, hot air.

101. BURNERS, GAS, ACETYLENE. Burners of a type that are structurally designed for the burning of acetylene gas.

Search Class—

- 67—ILLUMINATING BURNERS, subclass 105, Gaseous fuel burners, Acetylene.

102. BURNERS, GAS, GAS-JET ATTACHMENTS. Devices that are in the nature of attachments to the ordinary form of gas-burner, usually illuminating, and structurally designed to produce an intense heating or Bunsen flame.

Search Classes—

- 158—LIQUID AND GASEOUS FUEL BURNERS, subclass 111, Burners, Gas, Laboratory type.
- 126—STOVES AND FURNACES, subclass 248, Heaters, Liquid or gaseous fuel, Attachments, Drum, and the following subclasses down to and inclusive of subclass 250, Heaters, Liquid or gaseous fuel, Attachments, Lamp, Stands, Article support.

103. BURNERS, GAS, GAS-JET ATTACHMENTS, CONVERTIBLE. Jet attachments that are designed to transform an ordinary gas-burner into a Bunsen burner, and vice versa, without the necessity of removing or exchanging any of its parts.

104. BURNERS, GAS, MULTIPLE. Burners in which there is a combined series of burner-tubes, all being fed from a common gas-supply pipe or chamber.

CLASS 158—Continued.

105. BURNERS, GAS, MULTIPLE, INDEPENDENT CUT-OFF. That type of multiple burner in which means are employed to cut off the supply of gas to one or more of the series of burners, thereby lessening or increasing the heating capacity of the burner, as desired.

103. BURNERS, GAS, MULTIPLE, MIXING-TUBE. That type of multiple burner in which each one of the burner-tubes is provided with independent gas and air mixing means.

Search Class—

- 158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 118, Gas and air mixers, and 119, Gas and air mixers, proportional.

107. BURNERS, GAS, MULTIPLE, RELATIVELY ADJUSTABLE. Multiple burners in which one or more of the series of burners may be adjusted to adapt them to a designed use, usually to fit the several stove-holes and water-back.

108. BURNERS, GAS, REGENERATIVE. Gaseous-fuel burners in which the gas is heated or superheated by the heat of the burner prior to its discharge to the burner proper.

Search Classes—

- 158—LIQUID AND GASEOUS-FUEL BURNERS, subclass 54, Burners, Liquid-fuel, Retort, Superheating.
- 67—ILLUMINATING BURNERS, subclasses 103, Gaseous-fuel burners, Regenerative, and 109, Gaseous-fuel burners, Regenerative, Gas.

109. BURNERS, GAS, PRESSURE-BURNERS. Gaseous-fuel burners of the heating type in which gas and air or steam are delivered to the mixing-chamber under pressure and discharged with high velocity into the furnace combustion chamber. The type of devices in this subclass are designed to be employed for industrial purposes rather than domestic.

Search Classes—

- 158—LIQUID AND GASEOUS-FUEL BURNERS, subclass 73, Burners, Liquid-fuel, Spray, and the subclasses thereunder.
- 67—ILLUMINATING BURNERS, subclass 107, Gaseous-fuel burners, Multiple fluid.

110. BURNERS, GAS, CONCENTRIC GAS AND AIR JET. Burners of the gaseous-fuel type in which the burner is provided with a gas and air mixing chamber, air-tubes passing through said chamber and supplying a secondary supply of air to the burner nozzles or tips.

Search Class—

- 158—LIQUID AND GASEOUS-FUEL BURNERS, subclass 30, Burners, Liquid-fuel, Automobile, Gas-chamber.

111. BURNERS, GAS, LABORATORY TYPE. Burners known in the arts as "Bunsen" or "laboratory" type. This subclass does not include all gas and air mixing burners, but only those of the character noted.

Search Classes—

- 158—LIQUID AND GASEOUS-FUEL BURNERS, subclasses 102, Burners, gas, gas-jet attachments; 103, Burners, Gas, Gas-jet attachments, Convertible; 118, Gas and air mixers, and 119, Gas and air mixers, Proportional.
- 126—STOVES AND FURNACES, subclass 248, Heaters, Liquid or gaseous fuel, Attachments, Drum, and the following subclasses down to and inclusive of subclass 250, Heaters, Liquid or gaseous fuel, Attachments, Lamp, Stands, Article support.

112. BURNERS, GAS, DAVY-LAMP DIAPHRAGM. Gaseous-fuel burners that are provided with a wire-gauze diaphragm or finely-perforated plate designed to prevent the flashing or lighting back of the flame.

Search Class—

- 158—LIQUID AND GASEOUS-FUEL BURNERS, subclass 97, Burners, Liquid-fuel, Absorbent, Alcohol-lamp.

113. BURNERS, GAS, FLAME-DEFLECTORS. Gaseous-fuel burners that are provided with a superheated deflecting-disk or deflector designed to spread or deflect the flame of a burner.

Search Class—

- 158—LIQUID AND GASEOUS-FUEL BURNERS, subclass 70, Burners, Liquid-fuel, Retort, Underlying, Mixing-chamber and flame-deflector.

114. BURNERS, GAS, FUEL-DISTRIBUTERS. Gaseous-fuel burners that are provided with internal means adapted to equally distribute the gaseous fuel to the burner outlets or openings.

Search Class—

- 158—LIQUID AND GASEOUS-FUEL BURNERS, subclass 30, Burners, Liquid-fuel, Automobile, Gas-chamber.

115. BURNERS, GAS, LIGHTING DEVICES. Devices that are designed to light a burner or a series of burners, when the supply of gas is turned on, through the medium of a flame-jet and usually termed in the art "pilot-lights."

Search Classes—

- 158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 10 Fire-kindlers; 61, Burners, Liquid-fuel, Retort, Auxiliary heater, and 85, Burners, Liquid-fuel, Retort, Lighting and relighting devices.
- 67—ILLUMINATING BURNERS, subclass 14, Igniting devices, Gaseous, and the subclasses thereunder.

116. BURNERS, GAS, BURNER-CAPS. Gas burners in which the cap or top portion of the burner is the sole element of novelty.

Search Classes—

- 158—LIQUID AND GASEOUS-FUEL BURNERS, subclass 117, Burners, Gas, Burner-caps, Regulating.
- 67—ILLUMINATING BURNERS, subclass 112, Gaseous-fuel burners, Tips.

117. BURNERS, GAS, BURNER-CAPS, REGULATING. Gaseous-fuel burners where the cap or top portion of the burner is adjustable to vary the flame opening or openings.

CLASS 158—Continued.

Search Class—

158—LIQUID AND GASEOUS-FUEL BURNERS, subclass 121, Valves and cleaners, Pressure-governed.

117 5. BURNERS, PROCESSES. Processes or methods of burning liquid or gaseous fuel; also methods of feeding liquid fuel or gas to burners.

118. GAS AND AIR MIXERS. Devices designed to mix gas and air in such regulated proportion as when burned will produce a heating or Bunsen flame. This subclass does not include combined burner and gas and air mixing devices.

Search Classes—

158—LIQUID AND GASEOUS-FUEL BURNERS, subclass 111, Burners, Gas, Laboratory type.

67—ILLUMINATING BURNERS, subclass 88, Gaseous-fuel burners, Incandescent, and the subclasses thereunder.

119. GAS AND AIR MIXERS, PROPORTIONAL. Gas and air mixing devices where the regulating-valves are so connected that the movement of one operates the other, thus admitting a proportionally-regulated quantity of gas and air to the burner.

CLASS 158—Continued.

Search Class—

158—LIQUID AND GASEOUS-FUEL BURNERS, subclass 120, Valves and cleaners.

120. VALVES AND CLEANERS. Devices for regulating or controlling the supply of gaseous or liquid fuel, also indicators that note the position of the valves in burner mechanisms; also devices for keeping free the discharge-openings in burner mechanisms.

Search Class—

67—ILLUMINATING BURNERS, subclass 118, Gaseous-fuel burners, Regulating, and the subclasses thereunder.

121. VALVES AND CLEANERS, PRESSURE-GOVERNED. Valves embodied in the burner structure for controlling the burner outlet or outlets and operated by the pressure of the gas or generated vapor supplied to the burner to maintain a uniform flame in case of increase of pressure beyond the normal.

Search Class—

50—FLUID-PRESSURE REGULATORS, subclass 17, Regulators, Outlet-pressure, Varying resistance, Automatic weight-varying.

CLASS 161.—TIME-CONTROLLING MECHANISM.

DEFINITIONS.

Class.

This class includes inventions, with the exception of time fuses, time locks, and railway time signals, having any claims on mechanism whereby any operation is performed or any machine or device is operated at a predetermined time or which indicates the time in which certain operations have been performed.

For the specific character of time mechanism search should also be made in class 58, HOROLOGY. For the specific character of the mechanism operated upon, search should also be made in the appropriate class.

For time mechanism permitting the display of a railway-signal at a certain time or for noting the time when the last train passed, see class 246, RAILWAY SIGNALING, subclasses 42, Signals, Time, and 43, Signals, Time, Retarders. For time-locks see class 70, LOCKS AND LATCHES. For time fuses, see class 102, Ammunition and Explosive Devices.

Subclasses.

1. MISCELLANEOUS. Time-controlled mechanisms not classifiable elsewhere.
2. ANNUNCIATORS, ELECTRIC, SELECTIVE-ALARM. Electrically-controlled mechanism whereby at any desired time or times alarms or signals are sounded at any one or more of several places—as, for example, calling guests in hotels at any predetermined time. The distinctive feature of this subclass is in the provision for sounding any one or more of the various alarms.
3. ANNUNCIATORS, ELECTRIC, SINGLE-ALARM. Electrically-controlled mechanism not otherwise classified whereby at any desired time or times an alarm is sounded, the feature distinguishing this subclass from subclass 2, this class, being that the same alarm is always sounded.
4. ANNUNCIATORS, ELECTRIC, SINGLE-ALARM, ADJUSTABLE-PIN. Electrically-controlled single-alarm annunciators where the closing of the circuits by which the alarm is actuated is made by means of a pin or its equivalent inserted in a movable part, as on the periphery of a rotating drum, the pin in the movement of the drum closing the circuit at the time indicated at the point of insertion.
5. ANNUNCIATORS, ELECTRIC, SINGLE-ALARM, AUXILIARY SWITCH. Electrically-controlled single-alarm annunciators having a series of circuits closed at regular intervals in the movement of the hands or other part of a clock, these circuits having also a set of auxiliary switches or equivalents whereby when the circuit is closed in the movement of the clock the alarm will be sounded if the corresponding auxiliary switch has been closed.
6. ANNUNCIATORS, MECHANICAL. Mechanically-operated and time-controlled devices for sounding an alarm at any desired times and with either regular or irregular intervals between the alarms.
7. VALVE-ACTUATING MECHANISM. Mechanism not elsewhere classified for operating valves at predetermined times.
8. VALVE-ACTUATING MECHANISM, DAMPERS. Time-controlled devices for operating dampers of stoves, furnaces, etc.
9. VALVE-ACTUATING MECHANISM, GAS-COCKS. Time-controlled devices for operating gas-cocks.
Search Class—
161—TIME CONTROLLING MECHANISM, subclasses 11, Lighting mechanism; 12, Lighting mechanism, Electric, and 14, Lighting mechanism, Friction.
10. VALVE-ACTUATING MECHANISM, STOCK-FEEDERS. Time-controlled devices for delivering food or water to stock.
11. LIGHTING MECHANISM. Devices elsewhere unclassified whereby a lamp, gas, etc., may be lighted at a predetermined time.

CLASS 161—Continued.

12. LIGHTING MECHANISM, ELECTRIC. Electric devices for lighting gas, etc., at a predetermined time.
13. ABOLISHED.
14. LIGHTING MECHANISM, FRICTION. Time-controlled friction devices for lighting gas, lamps, fires, etc.
15. TIMING MECHANISM. Devices not elsewhere classified whereby the time at which a certain thing is done or the time taken to do a certain thing is automatically indicated.
16. TIMING MECHANISM, CULINARY. Devices for indicating short intervals of time and sometimes sounding an alarm at the end thereof whereby the time necessary to cook articles of food, such as eggs, may be made known.
17. TIMING MECHANISM, GAME. Devices for indicating the time taken in playing billiards or other games.
18. TIMING MECHANISM, SPEED. Devices for indicating the time taken in racing or otherwise moving a definite distance.
19. TIMING MECHANISM, TELEPHONE-SERVICE. Devices for indicating the time occupied in telephonic conversation or for sounding an alarm when the prescribed interval allowed for conversation has nearly elapsed.
20. TIMING MECHANISM, WATCHMEN'S. Devices for indicating the times, when a watchman has signaled from his station.
Search Class—
234—RECORDERS, for devices for making a permanent record of such signals.
21. TIMING MECHANISM, WORKMEN'S. Devices for indicating the time when workmen arrive or depart or the time during which work has been done by them.
Search Class—
234—RECORDERS, for devices for making a permanent record of such data.
22. AWAKENERS. Devices aside from alarms whereby at any desired predetermined time a person is awakened either by causing the headboard of a bed to drop, or by rolling the occupant out of bed, or by any other means accomplishing the same result.
23. ALARMS. Alarms of various kinds (except alarm-clocks) operated at a predetermined time.
Search Class—
58—HOROLOGY, subclass 16, Clocks, Trains, Alarm.
24. TIME-BALLS. Time-balls and associated parts and the mechanism for operating the time-balls.
25. SWITCH ACTUATING MECHANISM. Electric switches not hereunder subclassified combined with mechanism for operating them at predetermined times.
Note.—This subclass includes many retarded switches and circuit breakers.
Search Classes—
161—TIME CONTROLLING MECHANISM, subclass 12, Lighting mechanism, Electric, for electric devices for lighting gas, etc.
175—ELECTRICITY, GENERAL APPLICATIONS, under Circuit breakers, for time limit relays and circuit breakers which will not operate until conditions in the circuit have continued abnormal for a certain interval.
26. SHUTTER ACTUATING MECHANISM. Mechanism for opening or closing camera shutters at predetermined times.
Note.—The ordinary mechanism for determining the duration of the exposure, and which constitutes an integral part of the shutter, is classified in class 95, PHOTOGRAPHY, subclass 53, Cameras, Shutters, and the subclasses thereunder.
27. SWITCH ACTUATING MECHANISM, CLOCK TRAIN TYPE. Electric switches combined with clocks, clock trains, or similar gearing for operating the same at predetermined times.



CLASS 163.—NEEDLE AND PIN MAKING.

DEFINITIONS.

Class.

This class contains special apparatus and processes for the manufacture of crocheting, knitting, and sewing needles, both for hand and machine use; also, machines and processes for making garment-fastening pins of the ordinary form, as well as safety-pins. All such single operations as bending, swaging, groove-milling, point-grinding, turning, and the like will be found in appropriate subclasses under the corresponding functional title.

The manufacture of hair-pins, which includes only ordinary wireworking operations, will be found in appropriate subclasses in class 140, WIREWORKING.

Subclasses.

1. NEEDLE-MAKING. Miscellaneous devices for completing the manufacture or for performing two or more operations upon sewing-needles for either hand or machine use.

Search Class—

163—NEEDLE AND PIN MAKING, subclass 4, Rotary blank-carrier.

2. NEEDLE-MAKING, KNITTING-NEEDLES. Machines and the like for making hook-ended needles for knitting or crocheting fabrics.
3. NEEDLE-MAKING, KNITTING-NEEDLES, TONGUED. Special machines for making tongued needles for knitting-machines or for attaching the tongues or latches to the bodies of such needles.
4. NEEDLE-MAKING, ROTARY BLANK-CARRIER. Needle-making machines having sets of grippers radially arranged on a circular carrier which has a step-by-step rotation to bring the needle-blanks into position to be operated upon by

CLASS 163—Continued.

the various shaping devices. In some cases a plurality of carriers is shown, together with means for transferring the blank from one carrier to another.

Search Class—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 52, Nail-making, Wire Nails, Rotary work-holder, and subclasses thereunder noted, for similar carriers.

5. NEEDLE-MAKING, PROCESSES. Miscellaneous methods of making sewing and knitting needles, both for hand and machine use.

Note.—For such processes as are discernible from an inspection of the article itself search subclass 5, Needles, in class 66, KNITTING AND NETTING; subclass 11, Needles, in class 112, SEWING-MACHINES, and subclasses 37, Needles, and 38, Needles, tape, in class 223, APPAREL APPARATUS.

6. PIN-MAKING. Devices for cutting, heading, and pointing ordinary straight pins.

7. PIN-MAKING, SAFETY-PINS. Machines and processes for making sheath-pointed garment-fastening pins. In most cases the machines are for shaping and attaching to the wire body the sheet-metal point-shield.

8. ASSORTING AND PACKAGING NEEDLES AND PINS. Machines for separating perfect from imperfect articles, for arranging them in bunches for packing, or for sticking them in regular order on cloth or paper.

Search Classes—

10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclasses 102 et seq., Distributors and feeders, for similar assorting devices.

132—TOILET, for packages of pins.

223—APPAREL APPARATUS, for needle holders.

1. The first part of the paper discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the success of any business or organization. The author argues that without accurate records, it is impossible to make informed decisions or to identify areas for improvement.

2. The second part of the paper focuses on the challenges of record-keeping in a rapidly changing environment. The author notes that new technologies and regulations can make it difficult to keep records up-to-date and accurate. However, the author also points out that these challenges can be overcome with the right tools and processes.

3. The third part of the paper provides a detailed overview of the various methods used to collect and analyze data. The author describes both traditional methods, such as surveys and interviews, and more modern methods, such as data mining and social media analysis. The author also discusses the importance of ensuring the reliability and validity of the data collected.

4. The fourth part of the paper discusses the ethical considerations of data collection and analysis. The author notes that there are many potential risks to privacy and security when collecting and analyzing data. However, the author also argues that the benefits of data-driven decision-making can outweigh these risks if proper safeguards are in place.

5. The fifth part of the paper provides a summary of the key findings and conclusions. The author reiterates the importance of accurate record-keeping and the need to stay up-to-date with the latest technologies and regulations. The author also provides some recommendations for how to implement effective record-keeping practices in a business or organization.

6. The sixth part of the paper discusses the future of record-keeping. The author predicts that as technology continues to advance, record-keeping will become even more important and more complex. The author also discusses some of the potential challenges that will arise in the future, such as the increasing volume of data and the need for more sophisticated analysis tools.

7. The seventh part of the paper provides a detailed overview of the various methods used to collect and analyze data. The author describes both traditional methods, such as surveys and interviews, and more modern methods, such as data mining and social media analysis. The author also discusses the importance of ensuring the reliability and validity of the data collected.

8. The eighth part of the paper discusses the ethical considerations of data collection and analysis. The author notes that there are many potential risks to privacy and security when collecting and analyzing data. However, the author also argues that the benefits of data-driven decision-making can outweigh these risks if proper safeguards are in place.

9. The ninth part of the paper provides a summary of the key findings and conclusions. The author reiterates the importance of accurate record-keeping and the need to stay up-to-date with the latest technologies and regulations. The author also provides some recommendations for how to implement effective record-keeping practices in a business or organization.

10. The tenth part of the paper discusses the future of record-keeping. The author predicts that as technology continues to advance, record-keeping will become even more important and more complex. The author also discusses some of the potential challenges that will arise in the future, such as the increasing volume of data and the need for more sophisticated analysis tools.

CLASS 164.—CUTTING AND PUNCHING SHEETS AND BARS.

DEFINITIONS.

Class.

This class embraces machines and processes for cutting, including die cutting and punching sheets, plates, or bars of metal, cloth, rubber, leather, paper, etc.

Machines for splitting and skiving of leather are classified in 69, LEATHER-WORKING.

Machines specially designed for working on boots and shoes, except die-cutting, are in class 12, BOOT AND SHOE MAKING.

Subclasses.

1. **BUTTONHOLES.** Devices for cutting buttonholes, usually in cloth or leather.

2. **BUTTONHOLES, MACHINES.** Machines for cutting buttonholes.

3. **BUTTONHOLES, KNIVES.** Buttonhole cutters having a knife form of cutter.

4. **BUTTONHOLES, PLIERS.** Buttonhole cutters having a plier form.

Search Classes—

164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 81, Cutting, Implements, Pliers, and 121, Punching, Implements, Pivoted handles, Pliers.

81—TOOLS, subclass 187, Pipe and rod cutters, Pivoted, and subclasses thereunder.

5. **BUTTONHOLES, PLIERS, MODIFIED SCISSORS.** Buttonhole cutters in which an ordinary pair of scissors is modified to cut the buttonholes.

6. **BUTTONHOLES, PLIERS, SCISSORS ATTACHMENTS.** Devices adapted to be secured to ordinary scissors to cut the buttonholes.

6.5. **EXPANDED METAL, RECIPROCATING.** Machines provided with a reciprocating cutter adapted to slit sheet metal and also provided with means for corrugating or for stretching the sheet.

Note.—Machines for forming expanded metallic lath are classified in this subclass. Machines for forming corrugated metallic lath are classified in class 153, METAL-BENDING.

6.6. **EXPANDED METAL, ROLLER.** Machines provided with a roller-cutter adapted to slit sheet metal and also provided with means for corrugating or stretching the sheet.

Note.—Machines which form expanded metallic lath are classified in this subclass. Machines for forming corrugated metallic lath are classified in class 153, METAL-BENDING.

Search Class—

164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 99, Punching, Machines, Roller.

7. **FENCE-BARBS.** Miscellaneous apparatus for cutting fence-barbs in strips of metal.

8. **FENCE-BARBS, CUTTERS AND DIES.** The cutter or the die of fence-barb cutters.

Search Class—

164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses under 25, Cutting, Die, Machines, Reciprocating-plunger; also under 86, Punching, Machines.

9. **FENCE-BARBS, CUTTERS AND DIES, ROLLER.** Rollers carrying the cutters or dies of fence-barb cutters.

Search Class—

164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses under Cutting; 29, Die, Machines, Roller-die; 60, Machines, Rotary-cutter; 77, Machines, Traveling-cutter-carriage, Roller-knife; also, 99, Punching, Machines, Roller, and 16, Combined machines, Roller-cutter and punch.

10. **FENCE-BARBS, PROCESSES.** Processes of cutting out the fence-barbs.

10.5. **PRINTERS' LEADS.** Machines for cutting, beveling, or mitering printers' leads.

10.6. **SCRAP CUTTING.** Special machines and processes for mechanically treating and cutting metal scrap, by operations peculiar to this class, preparatory to detinning, remelting, etc.

Search Classes—

39—METAL-WORKING, subclass 4.5, Special work, Communiting metal, for shaving and finely dividing into chips; also subclass 66, Metal-breakers; 83, MILLS, for pulverizing brittle metals; and in subclass 91, Liquid communiting and solidifying, for granulating molten materials; 75, METALLURGY, subclass 197, Miscellaneous, for granulating special to molten metal.

CLASS 164—Continued.

11. **COMBINED MACHINES.** Miscellaneous machines adapted to perform both the operations of cutting and punching.

12. **COMBINED MACHINES, WORK-FEEDING.** Combined machines which also have novelty in the mechanism for feeding the work to the operating parts.

Search Class—

164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses under Cutting, Die, Machines: 20, Work-feeding; 21, Work-feeding, Reciprocating-feeder; 22, Work-feeding, Roller-feed; under Cutting, Machines: 38, Fixed-cutter, Work-feeding; 39, Fixed-cutter, Work-feeding, Roller-feed; 42, Pivoted-cutter, Work-feeding; 48, Reciprocating-cutter, Work-feeding; 49, Reciprocating-cutter, Work-feeding, Roller-feed; 61, Rotary-cutter, Work-feeding; 62, Rotary-cutter, Work-feeding, Reciprocating-cutter; 68, Rotary-cutter, Transverse, Work-feeding; 67, Rotary-cutter, Transverse, Work-feeding, Printing-press attachments; also, 87, Punching, Machines, Feeding and punching, and 116, Punching, Machines, Feed mechanisms.

13. **COMBINED MACHINES, DIE CUTTING AND PUNCHING.** Machines adapted to both die cut and punch.

14. **COMBINED MACHINES, PIVOTED KNIFE-CARRIER.** Combined machines in which the cutter or part to which it is attached is pivoted. The punch is usually either directly attached to this pivoted carrier or is actuated directly by it.

15. **COMBINED MACHINES, RECIPROCATING KNIFE-CARRIER.** The knife or its carrier has a reciprocating movement. The punch is usually a separate plunger; but sometimes both cutter and punch are attached to the same plunger or head.

16. **COMBINED MACHINES, ROLLER CUTTER AND PUNCH.** A roller or cylinder carries cutters and punches upon its periphery.

17. **CUTTING.** Miscellaneous cutting apparatus or processes.

18. **CUTTING, DIE.** Miscellaneous machines or processes for stamping out articles by dies.

19. **CUTTING, DIE, MACHINES.** Miscellaneous die-cutting machines.

Search Classes—

131—TOBACCO, subclass 49, Cigarmakers' implements, Wrapper cutters.

223—APPAREL APPARATUS, subclass 55, Collar, cuff, and bosom machines.

20. **CUTTING, DIE, MACHINES, WORK-FEEDING.** Machines having also feeding mechanism attached.

Search Class—

164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses, including "Work-feeding," in titles. See note to subclass 12.

21. **CUTTING, DIE, MACHINES, WORK-FEEDING, RECIPROCATING-FEEDER.** Feeding devices having a reciprocating movement.

Search Class—

164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses, including "Work-feeding," in titles. See note to subclass 12.

22. **CUTTING, DIE, MACHINES, WORK-FEEDING, ROLLER-FEED.** Work is fed to the machine by rolls.

Search Class—

164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses, including "Work-feeding," in titles. See note to subclasses 12.

23. **CUTTING, DIE, MACHINES, RECIPROCATING CROSS-HEAD.** That type of machine having a cross head or bar, with guides at its ends, adapted to reciprocate with the attached die.

Search Classes—

164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 47, Cutting, Machines, Reciprocating cutter; 102, Punching, Machines, Shaft-driven.

131—TOBACCO, subclass 49, Cigarmakers' implements, Wrapper cutters.

144—WOODWORKING, subclass 196, Punching-cutters.

223—APPAREL APPARATUS, subclass 55, Collar, cuff, and bosom machines.

24. **CUTTING, DIE, MACHINES, RECIPROCATING CROSS-HEAD, SHIFTING DIES.** Several dies, as right and left dies for shoe-soles, are adapted to be alternately or successively brought to operative position.

25. **CUTTING, DIE, MACHINES, RECIPROCATING-PLUNGER.** The die is carried at the end of a simple plunger.

Search Classes—

164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 47, Cutting, Machines, Reciprocating cutter; 102, Punching, Machines, Shaft-driven.

CLASS 164—Continued.

- 131—TOBACCO, subclass 49, Cigarmakers' implements, Wrapper cutters.
- 144—WOODWORKING, subclass 196, Punching-cutters.
- 233—APPAREL APPARATUS, subclass 55, Collar, cuff, and bosom machines.
26. CUTTING, DIE, MACHINES, RECIPROCATING-PLUNGER, LEVER-OPERATED. Machines in which the plunger is operated by a lever or system of levers.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 15, Combined machines, Reciprocating knife-carrier; under Cutting, Machines; 44, Pivoted-cutter, Lever-operated; 46, Pivoted-cutter, Lever-operated, Compound leverage; 57, Reciprocating-cutter, Lever-operated; under Punching, machines; 91, Gang, Lever-operated; 92, Gang, Lever-operated, Foot; 96, Lever-operated, and 97, Lever-operated, Foot.
27. CUTTING, DIE, MACHINES, RECIPROCATING-PLUNGER, SCREW-OPERATED. The die-carrying plunger is adapted to be forced down by a screw.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 101, Punching, Machines, Screw-operated.
28. CUTTING, DIE, MACHINES, ROLLER-DIE. Cutting-die machines in which the cutting-die is secured to the periphery of a cylinder.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 9, Fence-barbs, Cutters and dies, Roller; 60, Cutting, Machines, Rotary-cutter, and 99, Punching, Machines, Roller.
29. CUTTING, DIE, DIES. Various structures of dies for stamping out articles.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 58, Cutting, Machines, Reciprocating-cutter, Cutters and bed-blocks, and 118, Punching, Machines, Dies and die-holders.
Note.—See also subclass 19, search notes.
30. CUTTING, DIE, DIES, SPIRAL-STRIP CUTTING. The die is spiral on its face, so that a coiled strip or string can be stamped out at one operation.
31. CUTTING, DIE, DIES, ADJUSTABLE-FACE. The face of the die can be adjusted to vary its size or its contour.
32. CUTTING, DIE, DIES, MULTIPLE CONCENTRIC. Two or more dies are placed one within the other. Sometimes, as in stamping out washers, both or all dies are used simultaneously, while in other cases any one of the dies can be used alone.
33. CUTTING, DIE, DIES, BLANK-EJECTING. Means for ejecting the blank or piece from the die after the blank is stamped out.
Note.—See search note to subclass 19.
34. CUTTING, MACHINES. Miscellaneous cutting-machines.
35. CUTTING, MACHINES, BAND-KNIFE. Cutting machines in which the cutter is of band or belt form and travels over pulleys or sheaves.
- Search Classes—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 74, Cutting, Machines, Traveling cutter-carriage, Motor-driven cutter.
143—WOOD-SAWING, subclass 17, Band-saw machines.
36. CUTTING, MACHINES, FIXED-CUTTER. Machines having a stationary cutter or cutters, the work usually being fed or drawn along against the knife; usually strap and string trimmers and arrangements for slitting various fabrics.
37. CUTTING, MACHINES, FIXED-CUTTER, SPIRAL STRIPS. Machines adapted to cut strings from disks, usually of leather. The disk is made to turn upon its center, while the string is continuously cut by the knife at the edge of the disk.
38. CUTTING, MACHINES, FIXED-CUTTER, WORK-FEEDING. Fixed cutter machines having mechanism for feeding the work to or past the cutters.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses including "work feeding" in titles. (See search note to subclass 12.)
39. CUTTING, MACHINES, FIXED-CUTTER, WORK-FEEDING, ROLLER-FEED. Machines in which the work is fed by rolls.
- Search Classes—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses including "work feeding" in titles. (See search note to subclass 12.)
12—BOOT AND SHOE MAKING, subclass 40, Sole machines, Slitting and grooving.
69—LEATHER MANUFACTURES, subclass 13, Machines, Skiving and splitting, Fixed-knife, Roller-feed.
40. CUTTING, MACHINES, OSCILLATING APERTURED CUTTERS. Machines having two apertured plates or disks, the apertures being shaped to fit the material to be cut and placed coincident, and one or both plates are rotated to shear off the inserted bar or rail.

CLASS 164—Continued.

41. CUTTING, MACHINES, PIVOTED-CUTTER. Machines in which the cutter or the part to which it is attached is pivoted.
- Search Classes—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 10.5, Printers-leads.
11—BOOK-BINDING, subclass 27, Indexing, Cutting and printing.
131—TOBACCO, subclasses 37, Cigar and cigarette cutters; 38, Cigar cutters, Tip; 33, Tobacco cutters, Pivoted knife.
143—VEGETABLE CUTTERS AND CRUSHERS, subclasses 12, Cutters, Bread; 23, Straw cutters, Pivoted knife, Without feed.
42. CUTTING, MACHINES, PIVOTED-CUTTER, WORK-FEEDING. Machines having mechanism for feeding the work to the cutter.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses including "work feeding" in titles. (See search note to subclass 12.)
43. CUTTING, MACHINES, PIVOTED-CUTTER, TRANSVERSE. Machines in which the cutter lies parallel to the pivot or axis and operates, like the jaws of a pair of nippers, to cut transversely or across the length of the material.
44. CUTTING, MACHINES, PIVOTED-CUTTER, LEVER-OPERATED. Machines in which the pivoted cutter is operated by a lever.
- Search Classes—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 10.5, Printer's leads.
131—TOBACCO, subclasses 37, Cigar and cigarette cutters, 38, Cigar cutters, Tip.
Note.—See search notes to subclass 26.
45. CUTTING, MACHINES, PIVOTED-CUTTER, LEVER-OPERATED, WORK-CLAMPING. Machines in which mechanism is provided for clamping the work while the pivoted cutter shears the material.
- Search Classes—**
164—CUTTING AND PUNCHING SHEETS AND BARS, under Cutting, machines: 79 Cutting-tables, Work-clamping; 55 Reciprocating-cutter, Draw-cut, Separately-operated clamp, and 52 Reciprocating-cutter, Separately-operated clamp.
144—WOODWORKING, subclass 289, Clamps, et seq.
46. CUTTING, MACHINES, PIVOTED-CUTTER, LEVER-OPERATED, COMPOUND-LEVERAGE. Machines in which the cutter is operated by a system of levers.
- Search Classes—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 14, Combined machines, Pivoted knife-carrier, 26, Cutting, Die, Machines, Reciprocating-plunger, Lever-operated; 57, Cutting, Machines, Reciprocating-cutter, Lever-operated; under Punching, Machines; 91 Gang, Lever-operated; 92 Gang, Lever-operated, Foot; 96, Lever-operated, and 97, Lever-operated, Foot.
131—TOBACCO, subclasses 37, Cigar and cigarette cutters, 38, Cigar cutters, Tip.
47. CUTTING, MACHINES, RECIPROCATING-CUTTER. Miscellaneous machines having a reciprocating cutter.
- Search Classes—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 15, Combined machines, Reciprocating knife-carrier; under Cutting, Die, Machines; 23, Reciprocating cross-head, and 24, Reciprocating-plunger, and 74, Cutting, Machines, Traveling cutter-carriage, Motor-driven cutter, Reciprocating; under Punching, Machines; 90, Machines, Gang; 102, Machines, Shaft-driven, and 109, Machines, Tie-band tongue.
11—BOOK-BINDING, subclass 27, Indexing, Cutting and printing.
131—DAIRY, subclass 65, Butter, Cutters; 68, Cheese, Cutters.
93—PAPER MANUFACTURES, subclass 33, Bag-Machines, Cutting.
112—SEWING-MACHINES, subclass 6, Trimmers.
131—TOBACCO, subclass 34, Tobacco cutters, Reciprocating-knife; 38, Cigar cutters, Tip.
144—WOODWORKING, subclasses, 196, Punching-cutters, and 197, Punching-cutters, Fixed-die; 162, Slicers, and 193, Splitting.
146—VEGETABLE CUTTERS AND CRUSHERS, subclass 7, Cutters, Reciprocating; and 17, Straw cutters, Cutter and bed, Reciprocating knife.
48. CUTTING, MACHINES, RECIPROCATING-CUTTER, WORK-FEEDING. Machines having mechanism for feeding the work to the cutter.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses including "work feeding" titles. (See search note to subclass 12.)
49. CUTTING, MACHINES, RECIPROCATING-CUTTER, WORK-FEEDING, ROLLER-FEED. Machines in which the work is fed by rolls.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses including "work feeding" titles. (See search note to subclass 12.)
50. CUTTING, MACHINES, RECIPROCATING-CUTTER, NOTCHED-WORK. Machines adapted to cut notches or scallops in the edges of materials, such as cloth for garments, leather for the button-flies of shoes, metal for currycomb-teeth, etc. Edge-pinking machines are here included.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 7, Fence barbs and subclasses thereunder, and 64, Cutting, Machines, Rotary-cutter, Notched-work.

CLASS 164—Continued.

51. CUTTING, MACHINES, RECIPROCATING-CUTTER, AUTOMATIC-CLAMP. Machines having clamping mechanism for holding the material, which mechanism is automatic in its action as distinguished from those machines in which the work-clamp is set up by hand.

Search Class—

- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 54, Cutting, Machines, Reciprocating-cutter, Draw-cut, Automatic-clamp, and 110, Punching, Machines, Strippers and hold-downs.

52. CUTTING, MACHINES, RECIPROCATING-CUTTER, SEPARATELY-OPERATED CLAMP. Machines in which the work-clamp is set up by hand.

Search Class—

- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 45, Cutting, Machines, Pivoted-cutter, Lever-operated, Work-clamping; 55, Cutting, Machines, Reciprocating-cutter, Draw-cut, Separately-operated clamp, and 79, Cutting, Machines, Cutting-tables, Work-clamping.

53. CUTTING, MACHINES, RECIPROCATING-CUTTER, DRAW-CUT. Machines in which the reciprocating knife has also an endwise-shearing movement, usually in machines for cutting piles of paper.

54. CUTTING, MACHINES, RECIPROCATING-CUTTER, DRAW-CUT, AUTOMATIC-CLAMP. Machines having an automatic mechanism for clamping the work as distinguished from a hand-operated clamp.

Search Class—

- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 51, Cutting, Machines, Reciprocating-cutter, Automatic-clamp, and 110, Punching, Machines, Strippers and hold-downs.

55. CUTTING, MACHINES, RECIPROCATING-CUTTER, DRAW-CUT, SEPARATELY-OPERATED CLAMP. Machines in which the work-clamp is set up by hand.

Search Class—

- 164—CUTTING AND PUNCHING SHEETS AND BARS, the following subclasses under Cutting, Machines: 79, Cutting-tables, Work-clamping; 45, Pivoted-cutter, Lever-operated, Work-clamping, and 52, Reciprocating-cutter, Separately-operated clamp.

56. CUTTING, MACHINES, RECIPROCATING-CUTTER, FLUID-OPERATED. Machines in which some fluid, as water, steam, etc., is employed to operate them.

Search Class—

- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 95, Punching, Machines, Hydraulic.

57. CUTTING, MACHINES, RECIPROCATING-CUTTER, LEVER-OPERATED. Machines in which the cutter is actuated by lever movement.

Note.—See search notes to subclass 26.

58. CUTTING, MACHINES, RECIPROCATING-CUTTER, CUTTERS AND BED-BLOCKS. Machines in which the novelty lies in the cutter or the block which opposes or receives the thrust of the cutter.

Search Class—

- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 118, Punching, Machines, Dies and die-holders.

59. CUTTING, MACHINES, RECIPROCATING-CUTTER, GAGES. Machines in which the novelty lies in the gage or guide for determining the position of the cut with respect to the work; usually regulates the length of part cut off.

60. CUTTING, MACHINES, ROTARY-CUTTER. Machines having a cutter which when in operation is rotated.

Search Classes—

- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 99, Punching, Machines, Roller.
17—BUTCHERING, subclass 19, Meat cutters, Cylinder and block.
93—PAPER MANUFACTURES, subclass 33, Bag machines, Cutting.
131—TOBACCO, subclass 35, Tobacco cutters, Rotating knife.
149—VEGETABLE CUTTERS AND CRUSHERS, subclass 11, Cutters, Rotary.

61. CUTTING, MACHINES, ROTARY-CUTTER, WORK-FEEDING. Machines which include mechanism for feeding the work to the cutter.

Search Class—

- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses including "work feeding" titles. (See search note to subclass 12.)

62. CUTTING, MACHINES, ROTARY-CUTTER, WORK-FEEDING, RECIPROCATING-FEEDER. Machines in which the feeder has a reciprocating motion.

Search Class—

- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses including "Work feeding" titles. (See search note to subclass 12.)

63. CUTTING, MACHINES, ROTARY-CUTTER, CURVED-PLATE-WORK. Machines for cutting disks or elliptical shapes. Usually the material is rotated about its center and a pair of opposed cutting-disks engage, one above and one below, the work near its edge and trim it to shape. Sometimes the work is stationary and the cutters travel around the edge.

64. CUTTING, MACHINES, ROTARY-CUTTER, NOTCHED-WORK. Machines which pink, notch, or scallop the edges of various materials.

CLASS 164—Continued.

Search Class—

- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 7, Fence barbs, Cutters and dies, Roller; 10, Fence barbs, Processes, and 50, Cutting, Machines, Reciprocating-cutter, Notched-work.

65. CUTTING, MACHINES, ROTARY-CUTTER, SLITTERS AND WINDERS. Machines adapted to trim or cut into strips continuous webs and wind them up upon spools or drums. Many wall-paper-trimming machines are here included.

66. CUTTING, MACHINES, ROTARY-CUTTER, TRANSVERSE. Machines in which the plane of the knife is parallel to the axis of rotation, as in an ordinary lawn-mower, and which cut the web of material transversely of its length.

Search Class—

- 144—WOODWORKING, subclasses 220, Cutters, Rotary, Cylindrical, Spiral-bit, and 230, Cutters, Rotary, Cylindrical, Slotted bit-seat.

67. CUTTING, MACHINES, ROTARY-CUTTER, TRANSVERSE, WORK-FEEDING, PRINTING-PRESS ATTACHMENTS. Machines adapted to be attached to printing-presses to feed and cut the paper into lengths.

Search Class—

- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses including "Work feeding" titles. (See search note to subclass 12.)

68. CUTTING, MACHINES, ROTARY-CUTTER, TRANSVERSE, WORK-FEEDING. Machines which have also feeding mechanism for the work.

Search Classes—

- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses including "Work feeding" titles. (See search note to subclass 12.)
15—BRUSHING AND SCRUBBING subclass 40, Brush-trimming machines.

69. CUTTING, MACHINES, ROTARY-CUTTER, ROTARY WORK-MANDREL. Machines in which the work is carried upon a rotary work-mandrel while being cut, as in cutting paper or other tubes into lengths, cutting rubber, leather or leather-board strings, rings, etc.

70. CUTTING, MACHINES, ROTARY-CUTTER, CUTTERS. Inventions in the cutter piece.

71. CUTTING, MACHINES, SWEEP-CUTTER. Machines for cutting disks and curved shapes by a knife which is carried at the end of a sweep-arm.

Search Class—

- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 82, Cutting, Implements, Sweep.

72. CUTTING, MACHINES, SWEEP-CUTTER, ELLIPTICAL WORK. Machines in which means is provided to move the knife or the work so as to make elliptical shape.

Search Classes—

- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 82, Cutting, Implements, Sweep.
33—DRAFTING, subclass 5, Ellipsographs.

73. CUTTING, MACHINES, TRAVELING CUTTER-CARRIAGE. Miscellaneous machines in which the cutter is moved about over the stationary work. Machines for cutting out garments, picture-mats, trimming cardboard, paper, etc., are here included.

Search Class—

- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 83, Cutting, Implements, Traveling, and 123, Punching, Implements, Traveling-roller.

74. CUTTING, MACHINES, TRAVELING CUTTER-CARRIAGE, MOTOR-DRIVEN CUTTER. Cutters given a separate cutting movement by a motor, in addition to such motion as is imparted to it by being moved by hand. The garment "overboard" cutters are here included.

Search Class—

- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 83, Cutting, Implements, Traveling.

75. CUTTING, MACHINES, TRAVELING CUTTER-CARRIAGE, MOTOR-DRIVEN CUTTER, RECIPROCATING. Machines in which the motor gives a reciprocating movement to the cutter.

Search Class—

- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 15, Combined machines, Reciprocating knife-carrier; 25, Cutting, Die, Machines, Reciprocating-plunger; 47, Cutting, Machines, Reciprocating-cutter; 86, Punching, Machines, and 102, Punching, Machines, Shaft-driven.

76. CUTTING, MACHINES, TRAVELING CUTTER-CARRIAGE, MOTOR-DRIVEN CUTTER, ROTARY. Machines in which the motor gives a rotary movement to the cutter.

Search Class—

- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 84, Cutting, Implements, Traveling, Roller-cutter, and 123, Punching, Implements, Traveling-roller.

77. CUTTING, MACHINES, TRAVELING CUTTER-CARRIAGE, ROLLER-KNIFE. Machines in which the cutter rolls along as the carriage is moved over the board by hand.

CLASS 164—Continued.

- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 16, Combined machines, Roller-cutter and punch; 28, Cutting, Die, Machines, Roller-die; 60, Cutting, Machines, Rotary-cutter; 84, Cutting, Implements, Traveling, Roller-cutter; 99, Punching, Machines, Roller, and 123, Punching, Implements, Traveling-roller.
- 78. CUTTING, MACHINES, CUTTING-TABLES.** Tables or boards on which material is laid while being cut; tailors' cutting-boards, tables on which photograph and other cards are trimmed; also some die-blocks.
- 79. CUTTING, MACHINES, CUTTING-TABLES, WORK-CLAMPING.** Machine having work-tables supplied with means for clamping the material.
- Search Classes—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 45, Cutting, Machines, Pivoted-cutter, Lever-operated, Work-clamping; 52, Cutting, Machines, Reciprocating-cutter, Separately-operated clamp, and 55, Cutting, Machines, Reciprocating-cutter, Draw-cut, Separately-operated clamp.
144—WOODWORKING, subclass 289, Clamps.
- 80. CUTTING, IMPLEMENTS.** Miscellaneous hand implements for cutting sheet or bar materials.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 119, Punching, Implements.
- 81. CUTTING, IMPLEMENTS, PLIERS.** Hand implements in the form of pliers.
- Search Classes—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 4, Buttonholes, Pliers, and 121, Punching Implements, pivoted handles, Pliers.
30—CUTLERY, subclasses 11, Pruning implements, and 24, Pruning Implements, Fruit clippers.
81—TOOLS, subclass 196, Pipe and rod cutters, Pivoted, and subclasses thereunder.
- 82. CUTTING, IMPLEMENTS, SWEEP.** Implements having a sweep action, as in cutting rings, disks, and segments; includes bits for either the usual hand brace or a machine.
- Search Classes—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 71, Cutting, Machines, Sweep-cutter, and 72, Cutting, Machines, Sweep-cutter, Elliptical work.
144—WOODWORKING, subclasses 24, Special work machines, Single or combined, Disk cutting, Sweep cutter.
145—WOODWORKING TOOLS, subclass 121, Augers, Sweeps.
- 83. CUTTING, IMPLEMENTS, TRAVELING.** Hand implements adapted to be moved generally in a straight line over the material in cutting it to shape, usually to trim or cut into lengths or strips, as leather-cutting gauges, wall-paper trimmers, etc.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 73, Cutting, Machines, Traveling cutter-carriage, and 74, Cutting, Machines, Traveling cutter-carriage, Motor-driven cutter.
- 84. CUTTING, IMPLEMENTS, TRAVELING ROLLER-CUTTER.** Implements in which the cutter is a disk.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 76, Cutting, Machines, Traveling cutter-carriage, Motor-driven cutter, Rotary; and 77, Cutting, Machines, Traveling cutter-carriage, Roller-knife; also, 123, Punching, Implements, Traveling-roller.
- 85. PUNCHING.** Miscellaneous apparatus and processes for punching holes in sheets and bars.
- Note.**—Under Cutting, Die, will be found those machines which punch out blanks when the object is to secure the blank, while those machines which punch holes, when the object is to get a perforated strip, sheet, or bar, are here included in the subclasses of Punching.
- 86. PUNCHING, MACHINES.** Miscellaneous machines for punching holes.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 8, Fence-barbs, Cutters and dies; 19, Cutting, Die, Machines; 34, Cutting, Machines; and 47, Cutting, Machines, Reciprocating-cutter.
- 87. PUNCHING, MACHINES, FEEDING AND PUNCHING.** Machines adapted to feed the material as well as punch it.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 12, Combined machines, Work-feeding; 20, Cutting, Die, Machines, Work-feeding; under Cutting, Machines: 38, Fixed-cutter, Work-feeding; 43, Pivoted-cutter, Work-feeding; 48, Reciprocating-cutter, Work-feeding; 61, Rotary-cutter, Work-feeding; 68, Rotary-cutter, Transverse, Work-feeding, and 116, Punching, Machines, Feed mechanisms.
- 88. PUNCHING, MACHINES, FEEDING AND PUNCHING, RECIPROCATING-FEED.** Machines in which the feeding mechanism has a reciprocating movement.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 12, Combined machines, Work-feeding; 21, Cutting, Die, Machines, Work-feeding, Reciprocating-feeder; under Cutting, Machines: 38, Fixed-cutter, Work-feeding; 42, Pivoted-cutter, Work-feeding; 48, Reciprocating-cutter, Work-feeding; 62, Rotary-cutter, Work-feeding, Reciprocating-feeder; 68, Rotary cutter, Transverse, Work-feeding, and 117, Punching, Machines, Feed mechanisms, Reciprocating.

CLASS 164—Continued.

- 89. PUNCHING, MACHINES, FEEDING AND PUNCHING, ROLLER-FEED.** Machines having the work fed by rolls.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 12, Combined machines, Work-feeding; 22, Cutting, Die, Machines, Work-feeding, Roller-feed; under Cutting, Machines: 39, Fixed cutter, Work-feeding, Roller-feed; 42, Pivoted-cutter, Work-feeding; 49, Reciprocating-cutter; 61, Rotary-cutter, Work-feeding; 67, Rotary-cutter, Transverse, Work-feeding, Printing-press attachments, Work-feeding, Roller-feed; 68, Rotary-cutter, Transverse, Work-feeding, and 116, Punching, Machines, Feed mechanisms.
- 90. PUNCHING, MACHINES, GANG.** Machines having a series of punches.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 47, Cutting, Machines, Reciprocating-cutter.
- 91. PUNCHING, MACHINES, GANG, LEVER-OPERATED.** Gang punching machines in which the punch is operated by lever action.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 14, Combined machines, Pivoted knife-carrier; 25, Cutting, Die, Machines, Reciprocating-plunger, Lever-operated; under Cutting, Machines: 44, Pivoted-cutter, Lever-operated; 46, Pivoted-cutter, Lever-operated, Compound-leverage; 57, Reciprocating-cutter, Lever-operated; 96, Punching, Machines, Lever-operated, and 97, Punching, Machines, Lever-operated, Foot.
- 92. PUNCHING, MACHINES, GANG, LEVER-OPERATED, FOOT.** The lever is operated by foot.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 14, Combined machines, Pivoted knife-carrier; 26, Cutting, Die, Machines, Reciprocating-plunger, Lever-operated; under Cutting, Machines: 44 Pivoted-cutter, Lever-operated; 46, Pivoted-cutter, Lever-operated, Compound-leverage; 57, Reciprocating-cutter, Lever-operated; under Punching, Machines: 96, Lever-operated, and 97 Lever-operated, Foot.
- 93. PUNCHING, MACHINES, GANG, PATTERN.** Machines in which the punches are so arranged as to punch out some pattern or design. Some permit of varying the design by rearranging the punches or leaving out some.
- 94. PUNCHING, MACHINES, HAMMER.** Machines in which a separate implement or the operator's hand is used to strike the punching-plunger.
- Search Class—**
101—PRINTING, subclasses 56, Hand stamps; 57, Hand stamps, Check-punches.
- 95. PUNCHING, MACHINES, HYDRAULIC.** Machines in which the punch is operated by liquid pressure.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 56, Cutting, Machines, Reciprocating-cutter, Fluid-operated.
- 96. PUNCHING, MACHINES, LEVER-OPERATED.** Machines in which the punch is operated by lever action.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 14, Combined machines, Pivoted knife-carrier; 26, Cutting, Die, Machines, Reciprocating-plunger, Lever-operated; under Cutting, Machines: 44, Pivoted-cutter, Lever-operated; 46, Pivoted-cutter, Lever-operated, Compound-leverage; 57, Reciprocating-cutter, Lever-operated; under Punching, Machines: 91, Gang, Lever-operated, and 92, Gang, Lever-operated, Foot.
- 97. PUNCHING, MACHINES, LEVER-OPERATED, FOOT.** The operating-lever is moved by foot.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses including titles "Lever-operated."
- 98. PUNCHING, MACHINES, PRINTERS' RULES.** Small rules adapted to be placed in printing-presses to mark the paper sheets.
- 99. PUNCHING, MACHINES, ROLLER.** Machines having the punches on the periphery of a disk, cylinder, or other roller.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 12, Combined machines, Work-feeding; 28, Cutting, Die, Machines, Roller-die; 60, Cutting, Machines, Rotary-cutter; 77, Cutting, Machines, Traveling cutter-carriage, Roller-knife, and 123, Punching, Implements, Traveling-roller.
- 100. PUNCHING, MACHINES, ROLLER, PRINTING-PRESS ATTACHMENTS.** Attachments for printing-presses in which a rotary perforator contacts, usually with the cylinder of the press to perforate the paper along certain lines either for pointing or for separation of the paper into sheets.
- 101. PUNCHING, MACHINES, SCREW-OPERATED.** Machines in which the punch is forced down by a screw.
- Search Classes—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 27, Cutting, Die, Machines, Reciprocating-plunger, Screw-operated.
100—PRESSES, subclass 44, Plunger, Screw.
- 102. PUNCHING, MACHINES, SHAFT-DRIVEN.** Punching machines in which the plunger, gate, or head is actuated by a rotary power-shaft, usually by cam or crank connection; principally machines for heavy work.

CLASS 164—Continued.

Search Class—

- 164**—CUTTING AND PUNCHING SHEETS AND BARS, subclass 2, Buttonholes, Machines; 23, Cutting, Die, Machines, Reciprocating cross-head; 25, Cutting, Die, Machines, Reciprocating plunger; 47, Cutting, Machines, Reciprocating-cutter; 75, Cutting, Machines, Traveling cutter-carriage, Motor-driven cutter, Reciprocating.
103. PUNCHING, MACHINES, SHAFT-DRIVEN, TILTING-FRAME. Machines in which the frame carrying the punch can be tilted so as to work at any angle desired.
104. PUNCHING, MACHINES, SHAFT-DRIVEN, STOP DEVICES. Gags or other arrangements for disengaging the punch from the operating mechanism so as to avoid stopping the entire machine while the punch is inoperative.
105. PUNCHING, MACHINES, SHAFT-DRIVEN, STOP DEVICES, SHAFT-CLUTCH. Clutches for disengaging the rotating shaft from the other parts of the machine to permit the punch to remain stationary.
106. PUNCHING, MACHINES, SHAFT-DRIVEN, STROKE ADJUSTMENTS. Arrangements for adjusting the descent of the punch.
107. PUNCHING, MACHINES, SHAFT-DRIVEN, SAFETY DEVICES. Devices for automatically pushing away the operator's hands before the punch descends or which otherwise operate to prevent injury to the operator.
108. PUNCHING, MACHINES, TUBE. Machines adapted to punch holes in tubes, usually thin-metal tubes.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 118, Punching, Machines, Dies and die-holders.
109. PUNCHING, MACHINES, TIE-BAND TONGUE. Machines adapted to punch locking-tongues in tie-bands.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 124, Punching, Punches.
110. PUNCHING, MACHINES, STRIPPERS AND HOLD-DOWNS. Attachments for stripping the material off the punch as the latter rises or for holding the material firmly while the punch is descending.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 51, Cutting, Machines, Reciprocating-cutter, Automatic-clamp, and 54, Cutting, Machines, Reciprocating-cutter, Draw-cut, Automatic-clamp.
111. PUNCHING, MACHINES, PUNCH-SELECTOR. Machines usually for perforating paper, in which a series or gang of punches is employed and from which series any number or set may be selected by the operator to perforate a design, pattern, or character. In some cases the entire design is selected by looking into operative position the desired punches, and all are then simultaneously forced through the material. In other cases each punch is made to perforate as it is selected. These perforated strips or cards are used for operating self-playing instruments, for Jacquard looms, type-setting machines, printing-telegraphs, etc. Strips which are perforated in a telegraphic circuit where they act as receivers are not here included.
- Search Class—**
178—TELEGRAPHY, subclass 52, Telegraphs, Perforating.
112. PUNCHING, MACHINES, PUNCH-SELECTOR, KEY-BOARD-CONTROLLED. Machines in which a keyboard is used by operating the keys of which the pattern is selected.
113. PUNCHING, MACHINES, PUNCH-SELECTOR, KEY-BOARD-CONTROLLED, ELECTRICALLY-OPER-

CLASS 164—Continued.

ATED. Machines in which by depressing the selected key a circuit is closed and one or more punches actuated.

114. PUNCHING, MACHINES, PUNCH-SELECTOR, PATTERN-CONTROLLED. Machines in which the selection of the punches is controlled by a pattern card or strip, so as to duplicate the pattern.
115. PUNCHING, MACHINES, PUNCH-SELECTOR, PATTERN-CONTROLLED, ELECTRICALLY-OPERATED. Machines in which the pattern permits through its perforations the closing of the punch-actuating circuits to duplicate the pattern.
116. PUNCHING, MACHINES, FEED MECHANISMS. Machines in which the only novelty lies in the mechanism for feeding the work.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses, including "Work-feeding." (See search note to subclass 12.)
117. PUNCHING, MACHINES, FEED MECHANISMS, RECIPROCATING. Machines in which the only novelty lies in a reciprocating feed device.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses, including "Work-feeding."
118. PUNCHING, MACHINES, DIES AND DIE-HOLDERS. Machines in which the novelty lies in the die which receives the thrust of the punch or in the means for holding the die.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 29, Cutting, Die, Dies; 58, Cutting, Machines, Reciprocating-cutter, Cutters and Bed-blocks, and 108, Punching, Machines, Tube.
119. PUNCHING, IMPLEMENTS. Miscellaneous hand implements for punching.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 1, Buttonholes, and 80, Cutting, Implements.
120. PUNCHING, IMPLEMENTS, PIVOTED HANDLES. Implements in which the handles of the implements are pivoted together, as in conductors' punches.
121. PUNCHING, IMPLEMENTS, PIVOTED HANDLES, PLIERS. Hand implements which take the form of pliers.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 4, Buttonholes, Pliers, and 81, Cutting, Implements, Pliers.
122. PUNCHING, IMPLEMENTS, PIVOTED HANDLES, PLIERS, TURRET. One member of the pliers carries a turret which may be rotated to bring any one of several different punches into operative position.
123. PUNCHING, IMPLEMENTS, TRAVELING-ROLLER. Hand implements to be run over a stationary surface to perforate it, as in marking, etc.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclasses 77, Cutting, Machines, Traveling cutter-carriage, Roller-knife; 84, Cutting, Implements, Traveling, Roller-cutters.
124. PUNCHING, PUNCHES. Punching machines in which the novelty lies in the punch.
- Search Class—**
164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 109, Punching, Machines, Tie-band tongue.
125. PUNCHING, PROCESSES. Various methods or processes of punching.

CLASS 168.—FARRIERY.

DEFINITIONS.

Class.

This class includes all inventions involving the shape, material, construction, and securing in place of the shoes of cattle and of horses; also, shoeing-stands and tools employed by blacksmiths in fitting and securing such shoes, with the exception of mere hoof-trimming knives, which will be found in class 30, CUTLERY, subclass 9, Knives, and patents on grinding machines which are stated to be intended for sharpening calks, but are of general utility.

Subclasses.

1. OVERSHOES. Shoes or boots which are temporarily fastened on the foot over the ordinary shoe; principally the means for securing such overshoes or boots.

Search Class—

54—HARNESS, subclass 82, Horse-boots.

2. OVERSHOES, MEDICATING. Overshoes and boots which are secured over the shoe and around the foot and leg of the animal for holding in place sponges, pads, etc., saturated with water or medicines for treating diseases of the foot.

Search Class—

54—HARNESS, subclass 82, Horse-boots.

3. OVERSHOES, SWAMP. Overshoes having broad soles which are intended to prevent the animal sinking in the soft ground of swamps or from injuring the grass of lawns.

Search Class—

54—HARNESS, subclass 82, Horse-boots.

4. SHOES. Miscellaneous horseshoes not classified in the other subclasses. It includes shoes made of specific materials and combinations of various materials.

5. SHOES, OX. The name indicates the contents of this subclass.

6. SHOES, HOOF-SPREADING. Miscellaneous shoes constructed to be adjusted for the purpose of spreading or permitting the spreading of the hoof when the heel has become contracted.

7. SHOES, HOOF-SPREADING, HINGED SECTIONS. Hoof-spreading shoes hinged at the toe to allow the heels and sides to expand and contract with the action of the hoof.

8. SHOES, HOOF-SPREADING, HINGED SECTIONS, SPRING. Hoof-spreading shoes having a spring located between the side bars of the shoe for spreading them apart at the heel.

9. SHOES, HOOF-SPREADING, HINGED SECTIONS, STRETCHING-BAR. Hinged section, hoof-spreading shoes having a sectional bar lying between the side sections of the shoe and pressing them outward.

10. SHOES, HOOF-SPREADING, WEDGE. Shoes formed with wedge-shaped projections which extend upward from the surface of the shoe between the heels and serve to spread them apart when the weight comes upon them.

11. SHOES, AUXILIARY TREAD-PLATE. Shoes made in sections, one of which is permanently secured to the hoof and the other is attached by various means to the permanent section and can be removed and renewed whenever it becomes worn.

12. SHOES, CUSHIONED. Miscellaneous shoes provided with elastic material between the plates of a composite structure or on the upper surface of the shoe between the same and the hoof.

13. SHOES, CUSHIONED, SOFT-TREAD. Metal shoes provided with sockets or grooves in their lower surface, into which are fitted blocks of elastic material which form the tread-surface of the shoe.

14. SHOES, CUSHIONED, SOFT-TREAD, SOLE-PAD. Cushioned soft-tread shoes the elastic material whereof is extended over the sole, or at least over the frogs of the foot, in order to protect the same from injury.

Note.—Similar sole-pads which are attached without modification in the structure of the shoe are found in subclass 26, Sole-pads, and the subclasses thereunder.

Search Class—

168—FARRIERY, subclass 26, Sole-pads, and the subclasses thereunder.

15. SHOES, CUSHIONED, SPRING-HEELS. A spring-heel is formed by a hinged or resilient portion of the shoe backed in some cases by a rubber or metallic spring.

Note.—This subclass does not include mere rubber pads on the heels of the shoe, for which see subclass 13, Shoes, Cushioned, Soft-tread, in this class.

CLASS 168—Continued.

16. SHOES, CUSHIONED, INTERFERENCE-PADS. The shoes are provided with pads at the edge to prevent injury from interference.

Note.—In many cases the cushion extends over the upper surface of the shoe, as in the constructions found in subclass 12, Shoes, Cushioned.

17. SHOES, FASTENINGS. Miscellaneous improvements in the devices for securing the shoe to the hoof.

Search Class—

168—FARRIERY, subclass 4, Shoes.

18. SHOES, FASTENINGS, BOOTS. Shoes without nails and secured by a well-defined boot structure extending up around the hoof and secured by straps and buckles.

Search Classes—

168—FARRIERY, subclasses 2, Overshoes, Medicating, and 3, Overshoes, Swamp.

54—HARNESS, subclass 82, Horse-boots.

19. SHOES, FASTENINGS, CLAMPED SECTIONS. Shoes made in sections having flanges or spurs which are clamped onto the edges of the hoof.

20. SHOES, FASTENINGS, INCLINED-FLANGE. Constructions in which sectional flanges embracing or interlocking with the shoe and the edge of the hoof are bolted or otherwise secured together.

21. SHOES, FASTENINGS, SIDE SPURS. Shoes provided with upwardly-extending spurs which are bent or clamped over the edge of the hoof and grasp the same with spurs or are secured to the hoof by nails or screws.

22. SHOES, FASTENINGS, TOE AND HEEL STRAPS. Shoes provided with a strap extending up the front of the hoof and heel-straps running from the heel of the shoe to and connecting with the toe-strap.

Note.—These shoes are somewhat like those of subclass 18, Shoes, Fastenings, Boots, but do not constitute a well-defined boot.

23. SHOES, FASTENINGS, NAILS AND SCREWS. The specific construction for securing the shoe to the foot by means of nails or screws.

24. SHOES, SHAPE. Peculiarities in the form of the shoe.

25. SHOES, WEIGHTS. Weighted shoes, toe-weights, heel weights, and combined weights and quarter-boots.

Search Class—

54—HARNESS, subclass 82, Horse-boots, for quarter-boots *per se*.

26. SOLE-PADS. Pads secured inside the shoe for the protection of the sole and frog of the foot. In some cases the pad comes into contact with the ground and gives a cushioned tread.

Note.—Sole-pads are distinguished from subclass 13, Shoes, Cushioned, Soft-tread, by the fact that the shoe *per se* is not composite or cushioned with elastic material, and there is no modification of the shoe.

27. SOLE-PADS, MEDICATING. Sole-pads constructed and adapted to be packed with sponge or other absorbent material to be saturated with medicines for the treatment of foot diseases or in some cases with water to keep the foot moist.

Search Class—

168—FARRIERY, subclass 3, Overshoes, Swamp.

28. SOLE-PADS, ELASTIC. Sole-pads formed of rubber or other elastic material to protect the sole and frog, relieve them from shock, and to keep the foot from balling up with snow in the winter.

29. CALKS. The form, construction, or arrangement of the calks on the shoe.

Note.—Where there is any novelty in the mode of attachment of a removable calk, the patent is cross-referenced into the appropriate subclass of calks, removable.

30. CALKS, CREEPER-SECTIONS. Auxiliary calked sections adapted to be clamped to the shoe to prevent slipping.

Note.—Distinguished from subclass 11, Shoes, Auxiliary tread-plate, in being of a temporary nature less intimately associated in structure with the primary shoe, and the latter is not modified in structure to provide for the attachment.

Search Classes—

36—BOOTS, SHOES, AND LEGGINGS, subclasses 59, Antislipping devices, and 67, Antislipping devices, Calks.

46—GAMES AND TOYS, subclass 50, Skates.

31. CALKS, REMOVABLE. Miscellaneous means for securing a removable calk to the shoe.

32. CALKS, REMOVABLE, BOLT. Removable calks attached to the shoe by one or more bolts or screws and where a single one is employed it is prevented from turning by a flange or shoulder on one part or the other.

CLASS 168—Continued.

33. **CALKS, REMOVABLE BOLT AND LUG.** Calks secured to the shoe by a screw or bolt and prevented from turning on the bolt by a lug on one part engaging a socket in the other.
34. **CALKS, REMOVABLE, CLAMPED.** Calks provided with clamps by which they are clamped upon the shoe.
35. **CALKS, REMOVABLE, DOVETAILED.** Shoe and calk joined by a dovetailed connection and locked against movement by a variety of means.
36. **CALKS, REMOVABLE, HOOKED LUG AND PIN.** Calks or shoes provided with one or more hooked or undercut lugs which enter an undercut socket and are forced laterally into engagement. They are then locked by a pin which enters the shoe and the calk.
37. **CALKS, REMOVABLE, HOOKED LUG AND WEDGE.** Calks or shoes provided with one or more undercut lugs which enter a socket and one wedged laterally to lock them in an undercut portion of the socket.
38. **CALKS, REMOVABLE, NAIL-CALKS.** The head of one of the nails which are used to secure the shoe to the hoof is so formed as to serve the purpose of a calk.
39. **CALKS, REMOVABLE, TENONED, BUTTON-HEAD.** Calk and shoe connected by means of a tenon having a button-head which enters a socket and is then turned on its axis to lock it in place.
40. **CALKS, REMOVABLE, TENONED, CROSS-PINNED.** Calk and shoe connected by a tenon-and-socket connection secured in place by a cross-pin or set-screw.
41. **CALKS, REMOVABLE, TENONED, FRICTION.** Calk and shoe joined by a tenon-and-socket connection, the parts being retained by friction.
42. **CALKS, REMOVABLE, TENONED, SCREW-THREADED.** A tenon on the calk or a lug on the shoe is screw-threaded and the parts are screwed together. Various means are employed to prevent the parts from unscrewing.

CLASS 168—Continued.

43. **CALKS, REMOVABLE, TENONED, WEDGED.** The calk or a tenon on the same is inserted in a socket in the shoe and wedged in place.
44. **SHOEING-STANDS.** Stands used by blacksmiths for holding tools, supporting the foot of the animal, or serving as a seat for the workman.
Search Class—
119—ANIMAL HUSBANDRY, subclass 98, Restraining devices, Stocks, and the subclasses thereunder.
45. **TOOLS.** Miscellaneous tools, largely compound tools for the use of blacksmiths.
46. **TOOLS, CALK-SHARPENERS.** Various tools or portable machines used for sharpening the calks of horseshoes without removal of the shoe.
Note.—Certain portable grinding-machines intended for this purpose, but having no special construction limiting or adapting them to this purpose, and suitable for general grinding, are classified in class 51, **GRINDING AND POLISHING**, subclass 12, Metal, Plane surfaces.
47. **TOOLS, HOOF AND SHOE EXPANDERS.** Tools used for expanding or pressing apart the heel portions of the hoof when they have become contracted. There are also some bending-tools for expanding the heels of a horseshoe to fit it to the foot.
48. **TOOLS, HOOF CLEANERS AND TRIMMERS.** Tools for the cleaning and trimming of the hoof in fitting it for the shoe.
Note.—Plain hoof-paring knives will be found in class 30, **CUTLERY**, subclass 9, Knives.
Search Class—
81—TOOLS, subclasses 187, Pipe and rod cutters; 196, Pipe and rod cutters, Pivoted, and 205, Pipe and rod cutters, Sliding, Rack and segment.
49. **TOOLS, NAIL-CLENCHERS.** Various clipping and clenching tools of the plier and tong type and also clenching-anvils.

CLASS 176.—ELECTRIC LAMPS.

DEFINITIONS.

Class.

This class includes (1) devices for illuminating by electricity; (2) apparatus and methods exclusively adapted for making and repairing electric lamps or parts, (3) distributing systems when limited to be used in connection with electric lamps, except as noted in the definition of subclass 8, Systems, in this class.

Electric lamps combined with other devices or structures are classified in the classes containing such devices or structures or in class 240, ILLUMINATION.

This class is limited to means for producing the light, and when such means is combined with means for modifying or distributing the light, such as reflectors or refractors (except arc lamps with side reflectors and incandescent lamps with reflectors or refractors within or as an integral part of the lamp bulb), or when combined with means for the support or protection of the light generator, the patent is classified in class 240, ILLUMINATION.

Note.—Class 177, ELECTRIC SIGNALING, includes lamps limited to signaling, and also display systems involving electric circuits. Display boards and signs are classified in class 49, CARD, PICTURE, AND SIGN EXHIBITING.

Note.—Class 176, ELECTRIC LAMPS, subclasses 17, Incandescent, Pyroelectric; 19, Incandescent, Pyroelectric, Circuit-controlling structure; 27, Incandescent, Multiple-filament lamps, Switch; 33, Incandescent, Bases, terminals, and bulb holders, Switch; 42, Arc, Liquid electrode, and the subclasses thereunder; 116, Arc, Cases and frames, Resistances and manual switches; and 122, Gas and vapor, and the subclasses thereunder, contain all manually operated switches in this class.

Search Classes—

- 173—ELECTRICITY, CONDUCTORS, subclass 328, Connectors, Quick detachable, and the subclasses thereunder, for lamp sockets.
- 174—ELECTRICITY, MEDICAL AND SURGICAL, appropriate subclasses, for electric lamps specially constructed for medical treatment.
- 175—ELECTRICITY, GENERAL APPLICATIONS, the subclasses under Igniting devices, and 219, ELECTRIC HEATING AND RHEOSTATS, appropriate subclasses, for electrically igniting lamps.
- 235—REGISTERS, subclass 1, Miscellaneous, for electrically illuminated game boards.
- 240—ILLUMINATION, appropriate subclasses, for portable battery lamps.

Subclasses.

- 1. MISCELLANEOUS. Inventions within the class definition not otherwise classifiable.
- 2. MANUFACTURE AND REPAIR, EXHAUSTION AND GAS CHARGING. Inventions for the removal of gases or vapors from lamp bulbs or tubes and for charging the same with gases or vapors. Includes also the driving off of occluded gases in filaments and leading-in wires. Includes arrangement of lamps for facility in exhausting.

Search Classes—

- 176—ELECTRIC LAMPS, subclasses 4, Manufacture and repair, Apparatus, Filaments and glowers, for apparatus for flashing filaments; 16, Incandescent, for incandescent lamps containing a particular gas or gas-absorbing or emitting material; 36, Incandescent, Seals, and 37, Incandescent, Seals, Plug and cap, for incandescent lamps provided with means for exhausting through the seal. Where through other parts of the globe, search class 176, subclass 16, Incandescent; 125, Gas and vapor. Gas and vapor admitting, for gas and vapor electric lamps provided with means for admitting gas thereto or withdrawing gas therefrom.
- 175—ELECTRICITY, GENERAL APPLICATIONS, subclass 314, Special ray apparatus, Tubes, for similar inventions in the production of X-ray tubes.
- 220—METALLIC SHIPPING AND STORING VESSELS, subclass 97, Cans, Hermetic sealers, for inventions in the general production of vacua in vessels, even though a particular degree of vacuum is desired.

- 3. MANUFACTURE AND REPAIR, APPARATUS. Miscellaneous apparatus, used in the manufacture and repair of electric lamps and parts thereof.

Search Classes—

- 176—ELECTRIC LAMPS, subclass 2, Manufacture and repair, Exhaustion and gas charging, for apparatus used in exhaustion and gas charging.
- 49—GLASS, subclass 2, Combined machines, Incandescent lamp making, for machines operating upon glass in the making of incandescent lamps.
- 4. MANUFACTURE AND REPAIR, APPARATUS, FILAMENTS AND GLOWERS. Apparatus used in the manufacture and repair of filaments and glowers for electric lamps, unless classified in some more general class, and apparatus for flashing filaments.

CLASS 176—Continued.

Search Classes—

- 176—ELECTRIC LAMPS, the subclasses of Filament and glower compositions, for methods of forming filaments and glowers.
- 18—PLASTICS, subclasses 8, Molding devices, Filament forming, and 54, Processes, Filament forming, for filament forming from plastic composition.
- 5. MANUFACTURE AND REPAIR, APPARATUS, ELECTRODES. Apparatus for use in the manufacture or repair of electrodes of electric lamps not classified in some more general class.
- Search Classes—
 - 176—ELECTRIC LAMPS, the subclasses of Electrode compositions, for methods of forming electrodes.
 - 204—ELECTROCHEMISTRY, generally, for plating electrodes and subclass 64, Electric furnaces, for analogous apparatus.
- 6. MANUFACTURE AND REPAIR, APPARATUS, CONNECTIONS. Apparatus for use in the forming of connections between leading-in wires and filaments or glowers or between individual filaments or glowers or sections thereof not classified in some more general class.
- Search Classes—
 - 113—SHEET METAL WARE, MAKING, appropriate subclasses, for soldering wire.
 - 219—ELECTRIC HEATING AND RHEOSTATS, appropriate subclasses, for electrically joining wire.
- 7. MANUFACTURE AND REPAIR, PROCESSES. Methods of manufacture and repair of electric lamps and parts thereof, except methods of manufacture and treatment of filaments, glowers, and electrodes and except those included in the following subclasses in this class:

Incandescent—

Pyroelectric—

- 21. Heaters and glowers,
- 35. Combined seals and connections,
- 36. Seals,
- 38. Connections.

Arc—

- 42. Liquid electrode.

Search Class—

- 176—ELECTRIC LAMPS, subclasses 3, Manufacture and repair, Apparatus and the subclasses thereunder; 6, Manufacture and repair, Apparatus, Connections, and 38, Incandescent, Connections, for apparatus and methods for replacing filaments by joining new filaments to the broken ends of old filaments or to the leading-in wires.
- 8. SYSTEMS. Miscellaneous electric systems limited to the supply of energy to electric lamps. The limitation to electric lamps includes special electric characteristics of electric lamps, the structure of electric lamps, or the use of electric lamps. Includes circuits involving a plurality of lamps except successive arc lamps.
- Search Classes—
 - 176—ELECTRIC LAMPS, subclasses 58, Arc, Starting and feeding, Multiple arc, 60, Arc, Starting and feeding, Multiple arc, Gear brake and detent; 61, Arc, Starting and feeding, Multiple arc, Arc shifting switch; and 62, Arc, Starting and feeding, Multiple arc, Arc shifting switch, Gear brake and detent, for circuits involving successive arc lamps; 124, Gas and Vapor, Special current supply, for means for supplying special current to gas and vapor electric lamps.
 - 171—ELECTRICITY, GENERATION, appropriate subclasses, for general systems of distribution.
 - 175—ELECTRICITY, GENERAL APPLICATIONS, subclass 312, Lamp dimmer systems, for connecting lamps to the circuit in various ways and inserting resistances for the purpose of regulating the intensity of the light.
 - 240—ILLUMINATION, subclasses 2, Combined light and structure, and the subclasses thereunder, for lamp systems combined with other structure; 9, Systems, for a plurality of illuminators where the invention resides in their arrangement.
- 9. SYSTEMS, COMBINED. Electric lamp systems including a combination of two or more of the following types of electric lamps; incandescent filament, incandescent pyroelectric, arc solid electrode, arc liquid electrode, gas and vapor.
- Search Classes—
 - 176—ELECTRIC LAMPS, subclass 1, Miscellaneous, for individual lamps embodying two or more types of electric light sources.
 - 240—ILLUMINATION, subclasses 37, Lanterns, Convertible; 52, Light supports; 72, Light supports, Brackets, Combined, and 77, Light Supports, Chandeliers, Combined.
- 10. SYSTEMS, INCANDESCENT. Miscellaneous electric lamp systems, including as translating devices, merely, incandescent electric lamps.
- Search Class—
 - 176—ELECTRIC LAMPS, subclass 9, Systems, Combined, for combined systems.

CLASS 176—Continued.

11. SYSTEMS, INCANDESCENT, PYROELECTRIC. Electric lamp systems including as translating devices, merely, pyroelectric incandescent lamps.

Search Class—

176—ELECTRIC LAMPS, subclass 9, Systems, Combined, for combined systems.

12. SYSTEMS, ARC. Miscellaneous electric lamp systems, including as translating devices, merely, arc lamps.

Search Class—

176—ELECTRIC LAMPS, subclass 9, Systems, Combined, for combined systems.

13. SYSTEMS, ARC, LIQUID ELECTRODE. Electric lamp systems including as translating devices, merely, liquid electrode arc lamps.

Search Class—

176—ELECTRIC LAMPS, subclass 9, Systems, Combined, for combined systems.

14. DISPLAY. Individual lamps modified for display purposes. Includes lamps modified to produce a certain design and means for intermittently and automatically lighting and extinguishing the lamp where the lamp or light source is modified for that purpose.

Search Classes—

176—ELECTRIC LAMPS, subclasses 24, Incandescent, Automatic switches and cut-outs, and 25, Incandescent, Automatic switches and cut-outs, Electromagnetic, for automatic switches.

40—CARD, PICTURE, and SIGN EXHIBITING, appropriate subclasses, for display lighting.

173—ELECTRICITY, CONDUCTORS, subclass 335, Connectors, Quick detachable, Multiple connection, taps, Lamp cluster, and subclasses thereunder, for cluster lamp sockets.

177—ELECTRIC SIGNALING, subclass 346, Systems, display, and the subclasses thereunder, for display lighting.

240—ILLUMINATION, subclass 10, Decorative lights.

15. ARC AND INCANDESCENT. Lamps wherein the heat of an arc is communicated to a body other than an electrode, which becomes incandescent.

Search Class—

176—ELECTRIC LAMPS, subclasses 41, Arc, and 121, Arc, Electrode structure, for lamps wherein fluid or granular material is fed to the arc; 117, Arc, Cases and frames, Arc confining, reflecting, for analogous structures; 121, Arc, Electrode structure, and the subclasses under Electrode compositions, for lamps wherein the incandescent body is a part of the electrode.

16. INCANDESCENT. Miscellaneous electric lamps wherein the luminant is a solid adapted to be heated to incandescence by the passage of an electric current therethrough. Electric lamp bulbs containing particular gases are included here. Electric lamps having one exhausted bulb within another exhausted bulb are included here.

Search Classes—

176—ELECTRIC LAMPS, subclasses 2, Manufacture and repair, Exhaustion and gas charging, and 7, Manufacture and repair, Processes, for electric lamp bulbs containing particular gases; 26, Incandescent, Multiple filament lamps, and 34, Incandescent, Reflectors and refractors, for electric lamps having one exhausted bulb within another.

179—TELEPHONY, subclass 94, Switchboards, Lamp-annunciators for lamp annunciators for telephone switchboards.

240—ILLUMINATION, subclass 100, Globes, for electric lamps having one bulb within another, the outer bulb not being exhausted.

17. INCANDESCENT, PYROELECTRIC. Incandescent lamps wherein the luminant consists of a substance having a high resistance at ordinary temperatures and a low resistance when heated, such substances being known as second-class conductors.

Search Class—

176—ELECTRIC LAMPS, the appropriate subclasses under subclass 16, Incandescent, but not in this group, for lamps wherein the luminant consists of pyroelectric material combined with material conductive at ordinary temperatures, and appropriate subclasses under Filament and glower compositions for compositions of glower used in pyroelectric lamps.

18. INCANDESCENT, PYROELECTRIC, LAMP-CIRCUITS. Lamp circuits for pyroelectric lamps wherein no specific structure is disclosed.

Search Class—

176—ELECTRIC LAMPS, subclasses 11, Systems, Incandescent, Pyroelectric, for systems involving a plurality of pyroelectric lamps; 17, Incandescent, Pyroelectric.

19. INCANDESCENT, PYROELECTRIC, CIRCUIT-CONTROLLING STRUCTURE. Miscellaneous structure of individual elements for controlling the electric circuit in pyroelectric lamps.

Search Class—

176—ELECTRIC LAMPS, subclass 17, Incandescent, Pyroelectric.

20. INCANDESCENT, PYROELECTRIC, CIRCUIT CONTROLLING STRUCTURE, AUTOMATIC. Structure of circuit controlling elements or devices for pyroelectric lamps, which elements or devices are entirely automatic in their operation. This subclass includes ballast resistances and thermal and electromagnetic circuit changers when limited to pyroelectric lamps.

Search Class—

176—ELECTRIC LAMPS, subclass 17, Incandescent, Pyroelectric.

CLASS 176—Continued.

21. INCANDESCENT, PYROELECTRIC, HEATERS AND GLOWERS. Miscellaneous structure of the means for heating the glower to a conductive temperature in pyroelectric lamps, the support of the heater and its arrangement relative to the glower, and the structure of the glower. Includes connections between the glower and leading wires.

Search Classes—

176—ELECTRIC LAMPS, subclass 17, Incandescent, Pyroelectric, and the appropriate subclasses under Filament and glower compositions.

219—ELECTRIC HEATING AND RHEOSTATS, appropriate subclasses, for compositions of heaters.

22. INCANDESCENT, PYROELECTRIC, HEATERS AND GLOWERS, RELATIVELY MOVABLE. Heaters and glowers for pyroelectric lamps that are relatively movable to enable the heater to be placed in proximity to the glower during the preliminary heating and removed therefrom when the glower has become conductive.

Search Class—

176—ELECTRIC LAMPS, subclass 17, Incandescent, Pyroelectric.

23. INCANDESCENT, TRANSFORMER LAMPS. Incandescent electric lamps wherein the filament is the secondary coil or part of the secondary circuit of a transformer, the secondary coil being built into the lamp.

Search Class—

176—ELECTRIC LAMPS, subclass 123, Gas and vapor, Luminous electrode, for lamps wherein the luminant forms part of a condenser.

24. INCANDESCENT, AUTOMATIC SWITCHES AND CUT-OUTS. Miscellaneous incandescent electric lamps provided with automatic switches and cut-outs. This subclass includes thermal cut-outs and switches, cut-outs whose operation depends upon an electro-static discharge or attraction, and those operated by a change in the pressure of the gas in the lamp bulb. Electromagnetic and thermal switches and cut-outs and automatically adjustable rheostats when located in the lamp base are included here.

Search Classes—

176—ELECTRIC LAMPS, subclass 10, Systems, Incandescent.

173—ELECTRICITY, CONDUCTORS, subclass 328, Connectors, Quick detachable, for thermal cut-outs in lamp sockets.

175—ELECTRICITY, GENERAL APPLICATIONS, appropriate subclasses, for electromagnetic switches and cut-outs in lamp sockets and cut-outs of general application.

240—ILLUMINATION, subclass 17.5, Lanterns, Electric safety, for cut-outs in safety lamps.

25. INCANDESCENT, AUTOMATIC SWITCHES AND CUT-OUTS, ELECTROMAGNETIC. Automatic switch and cut-out incandescent electric lamps where the switch or cut-out is electromagnet.

Search Class—

176—ELECTRIC LAMPS, the subclasses noted under subclass 24 above.

26. INCANDESCENT, MULTIPLE-FILAMENT LAMPS. Miscellaneous incandescent lamps which contain more than one filament. Does not include lamps having more than one filament branching out from two leading-in wires, in which case the circuit through the filaments would in general be always the same.

Search Classes—

176—ELECTRIC LAMPS, subclass 40, Incandescent, Filament form, for multiple filaments branching out from two leading-in wires.

173—ELECTRICITY, CONDUCTORS, subclass 328, Connectors, Quick detachable, and appropriate subclasses thereunder, for multiple filament lamp sockets.

27. INCANDESCENT, MULTIPLE FILAMENT LAMPS, SWITCH. Multiple filament lamps provided with multiple throw switches usually located in the base thereof.

Note.—This subclass and subclass 33, Incandescent, Bases, terminals, and bulb holders, Switch, contain all manually operable switches in incandescent lamps except pyroelectric.

Search Class—

173—ELECTRICITY, CONDUCTORS, subclasses 347, Connectors, Quick detachable, Switch, lamp socket type, Multiple throw, and 348, Connectors, Quick detachable, Switch, lamp socket type, multiple throw, Rotatable bulb, for lamp sockets provided with multiple throw switches.

28. INCANDESCENT, ELECTRODES IN CONTACT. Incandescent lamps in which the light is produced at the ends of electrodes, which are kept in contact.

Note.—Many structures in this subclass are similar to arc lamp structures.

29. INCANDESCENT, DOUBLE-BASE AND TUBULAR. Incandescent lamps having leading-in wires extending through different parts of the bulb or tube, generally through opposite ends. Includes also incandescent lamps of tubular form.

Search Class—

176—ELECTRIC LAMPS, subclasses 14, Display; 42, Arc, Liquid electrode, and the subclasses thereunder, and 122, Gas and vapor, and the subclasses thereunder, for tubular lamps.

30. INCANDESCENT, NON-REFILLABLE. Incandescent lamps constructed so as to prevent the placing of a new filament therein.

CLASS 176—Continued.

31. INCANDESCENT, LOCKS AND SEALS. Incandescent lamps provided with means for preventing their unauthorized removal or use.

Search Classes—

- 173—ELECTRICITY, CONDUCTORS, subclass 356, Connectors, Quick detachable, Locks and seals, for locking or sealing lamp socket connections or lamp socket switches.
240—ILLUMINATION, subclass 19, Lanterns, Miner's safety, for locks on miner's safety lamps.

32. INCANDESCENT, BASES, TERMINALS, AND BULB HOLDERS. Current terminals for incandescent lamps (except pyroelectric) and bulb holders.

Search Classes—

- 176—ELECTRIC LAMPS, subclasses 26, Incandescent, Multiple filament lamps, and 27, Incandescent, Multiple filament lamps, Switch, for bases of multiple filament lamps; 29, Incandescent, Double base and tubular, for bases for double base lamps; 37, Incandescent, Seals, Plug and cap, for lamps, where the base constitutes the seal for the bulb.
173—ELECTRICITY, CONDUCTORS, subclass 328, Connectors, Quick detachable, and the subclasses thereunder, for structural features which are of general application to connecting plugs.

33. INCANDESCENT, BASES, TERMINALS, AND BULB HOLDERS, SWITCH. Bases and bulb holders for incandescent lamps provided with manually operable switches.

Note.—This subclass and subclass 27, Incandescent, Multiple filament lamps, Switch, contain all manually operable switches in incandescent lamps except the pyroelectric subclasses.

Search Classes—

- 173—ELECTRICITY, CONDUCTORS, subclass 346, Connectors, Quick detachable, Switch, lamp socket type, and the subclasses thereunder, for switches located in lamp sockets.
240—ILLUMINATION, subclass 122, Switches and valves, for switches in lighting fixtures.

34. INCANDESCENT, REFLECTORS AND REFRACTORS. Incandescent lamps provided with light reflectors or refractors which modify the light source, as, for example, lamps wherein the exhausted lamp bulb is provided with a reflector or refractor located within the bulb or modifying the construction of the bulb.

Search Classes—

- 176—ELECTRIC LAMPS, subclass 37, Incandescent, Seals, Plug and cap, for heat reflectors in incandescent lamps.
240—ILLUMINATION, appropriate subclasses, for reflectors and refractors which do not modify the light source.

35. INCANDESCENT, COMBINED SEALS AND CONNECTIONS. The combination of that portion of an incandescent lamp bulb which supports the filament or the particular leading-in wires that are sealed to the glass of the bulb with the joints between the leading-in wires and the filament or with the structure of the leading-in wires between the seal and filament.

Note.—See the notes to subclasses 36, Incandescent, Seals, and 38, Incandescent, Connections.

36. INCANDESCENT, SEALS. Miscellaneous seals of the leading-in wires into the bulbs of incandescent lamps or the structure of the seal between that portion of the bulb that contains the leading-in wires and the remainder of the bulb. This subclass includes the structure of the seal and also methods for forming the same when limited to the electric lighting art.

Search Classes—

- 176—ELECTRIC LAMPS, subclasses 26, Incandescent, Multiple filament lamps, for modification of the seal for reception of three or more leading-in wires; 34, Incandescent, Reflectors, and refractors, for modification of the seal to form a reflecting surface; 35, Incandescent, Combined seals and connections, and 37, Incandescent, Seals, Plug and cap.
49—GLASS, subclasses 78, Processes, Incandescent lamp making, for forming incandescent lamp bulb seals, and 92, Structure, for wire glass.

37. INCANDESCENT, SEALS, PLUG AND CAP. Incandescent lamp bulb seals where the same are caps or plugs. This subclass does not include plugs or caps of vitreous material sealed to the bulb by fusion.

Search Classes—

- 176—ELECTRIC LAMPS, subclass 16, Incandescent.
49—GLASS, subclasses 2, Combined machines, Incandescent lamp making, and 78, Processes, Incandescent lamp making, for inventions relating merely to a method of sealing glass.

38. INCANDESCENT, CONNECTIONS. The structure of, or that applied to, the leading-in wires between the seal and filament in incandescent lamps, including the joint with the filament. Includes joints between separate filaments. Includes composition of the joint and methods of forming the same.

Search Classes—

- 176—ELECTRIC LAMPS, subclasses 2, Manufacture and repair, Exhaustion and gas charging, for eliminating occluded gases from leading-in wires and joints; 6, Manufacture and repair, Apparatus, Connections, for apparatus and methods employed in forming connections; 21, Incandescent, Pyroelectric, Heaters and glowers, for connection between glowers for pyroelectric lamps and leading wires; 29, Incandescent, Double base and tubular, for connections which place the filament under tension; 37, Incandescent, Seals, Plug and cap, for heat radiators and reflectors.
75—METALLURGY, subclass 1, Alloys, for composition of alloys.
113—SHEET METAL WARE, MAKING, appropriate subclasses, and 219, ELECTRIC HEATING AND RHEOSTATS, appropriate subclasses, for soldering together of metal wires.

CLASS 176—Continued.

39. INCANDESCENT, AUXILIARY FILAMENT-SUPPORT. Supports for filaments in incandescent lamps other than leading-in wires, except those which support the filament throughout its length. Many of these are for metallic filament lamps.

Search Classes—

- 176—ELECTRIC LAMPS, subclass 16, Incandescent, for filaments supported throughout their length, and subclass 1, Miscellaneous, for filaments so supported where the support itself is designed to become incandescent.
240—ILLUMINATION, subclass 90, Light supports, Resilient, for electric lamps resiliently supported.

40. INCANDESCENT, FILAMENT FORM. Filaments for incandescent lamps of special form or structure.

Search Class—

- 176—ELECTRIC LAMPS, subclasses 4, Manufacture and repair, Apparatus, Filaments and glowers, for molds for forming filaments in definite shapes; 14, Display; 16, Incandescent; 34, Incandescent, Reflectors and refractors, and 39, Incandescent, Auxiliary filament support.

41. ARC. Electric lamps which utilize the phenomena of the arc to produce illumination. In the electric arc the current forms its own conductor and is carried across the gap between the electrodes by a vapor bridge produced from the material of the negative electrode and consisting of a vapor stream issuing from the negative electrode to the positive electrode.

Search Class—

- 240—ILLUMINATION, appropriate subclasses, for arc lamp supports and accessories not modifying the light source.

42. ARC, LIQUID ELECTRODE. Electric arc lamps wherein one of the electrodes is a liquid, usually mercury. Includes methods for manufacturing liquid electrode arc lamps.

Note.—Liquid electrode arc apparatus when limited to use as lamps or as rectifiers are classified in this class or in class 171, ELECTRICITY, GENERATION, subclass 253, Systems of distribution, Alternating-direct, respectively. Details and features not limiting such apparatus to a particular use are classified here. However, apparatus taking energy from alternating current mains and furnishing a rectified current, unless limited to use as lamps, is classified in class 171, ELECTRICITY GENERATION.

Search Classes—

- 176—ELECTRIC LAMPS, subclass 2, Manufacture and repair, Exhaustion and gas charging, for exhausting liquid electrode arc containers.
172—ELECTRICITY, MOTIVE POWER, subclass 238, Transmission of power, Phase-modification, for liquid electrode arc frequency changers.

43. ARC, LIQUID ELECTRODE, TEMPERATURE REGULATION. Means for regulating the temperature of liquid electrode arc lamps or parts thereof.

44. ARC, LIQUID ELECTRODE, PROTECTORS. Means for protecting liquid electrode arc lamps against breakage from jars during transportation or otherwise.

45. ARC, LIQUID ELECTRODE, STARTING. Miscellaneous means for furnishing the energy necessary to establish the arc in liquid electrode arc lamps.

Search Class—

- 176—ELECTRIC LAMPS, subclass 42, Arc, Liquid electrode, for means for maintaining the arc under varying conditions, such as varying current and voltage.

46. ARC, LIQUID ELECTRODE, STARTING, COMBINED. A combination of two or more devices for starting the arc in liquid electrode arc lamps.

47. ARC, LIQUID ELECTRODE, STARTING, DRAWING ARC. Starting means for liquid electrode arc lamps which operate to separate from contact two electrodes and not hereunder subclassified. A method often employed is to establish an electric current through the cathode of the lamp and to break the circuit mechanically at the cathode, leaving the cathode of the lamp the negative electrode of the arc thus formed. This particular subclass includes devices operating to produce a starting arc between a lamp anode and a lamp cathode.

Search Class—

- 176—ELECTRIC LAMPS, subclass 46, Arc, Liquid electrode, Starting, Combined.

48. ARC, LIQUID ELECTRODE, STARTING, DRAWING ARC, TILTING LAMP. Drawing arc starting devices for liquid electrode arc lamps which operate to break contact between a lamp anode and cathode by tilting or otherwise moving the lamp.

Search Class—

- 176—ELECTRIC LAMPS, subclass 46, Arc, Liquid electrode, Starting, Combined.

49. ARC, LIQUID ELECTRODE, STARTING, DRAWING ARC, AUXILIARY ELECTRODE. Drawing arc starting means for liquid electrode arc lamps which operate to establish a starting arc between the lamp cathode and an auxiliary anode, the main anode of the lamp not being included in the circuit of said starting arc.

Search Class—

- 176—ELECTRIC LAMPS, subclass 46, Arc, Liquid electrode, Starting, Combined.

50. ARC, LIQUID ELECTRODE, SOLID-ELECTRODE STRUCTURE AND SEALS. Solid electrodes for liquid electrode arc lamps, structure applied thereto, the solid conductors which connect with the liquid electrodes, and the sealing of the same within the container.

CLASS 176—Continued.

Search Classes—

176—ELECTRIC LAMPS, subclasses 35, Incandescent, Combined seals and connections; 36, Incandescent, Seals; 37, Incandescent, Seals, Plug and cap, and 126, Gas and vapor, Electrodes, terminals, and seals, for other seals.

175—ELECTRICITY, GENERAL APPLICATIONS, subclasses 313, Special ray apparatus, and 314, Special ray apparatus, Tubes, for similar structure applied to X-ray apparatus.

51. ARC, SIDE-REFLECTOR TYPE. Arc lamps wherein the light source is modified for the reception of a reflector at the side of the arc to concentrate the rays. The modification of the light source, for example, may be for use in projection apparatus or in headlights or searchlights. This subclass contains all arc lamp patents in class 176 which disclose reflectors.

Search Classes—

176—ELECTRIC LAMPS, subclasses 72, Arc, Starting and feeding, Motor; 73, Arc, Starting and feeding, Motor, Electric; 74, Arc, Starting and feeding, Motor, Electric, Motor circuit control; 75, Arc, Starting and feeding, Motor, Electric, Motor circuit control, Automatic switch, and 76, Arc, Starting and feeding, Positive intermittent-grip gear, for arc lamps modified for use with a reflector.

88—Optics, subclass 24, Projecting apparatus.

172—ELECTRICITY, MOTIVE POWER, subclass 179, Motors, Hand-operating devices, for circuit controlling stands for searchlights.

240—ILLUMINATION, subclasses 61, Light supports, Dirigible, for light supports which are movable to direct the beam; and 105, Reflectors, Side.

52. ARC, FLAMING AND LUMINOUS ARC. In flaming and luminous arc lamps a large portion of the light is produced in the arc itself as distinguished from those arc lamps wherein most of the light is produced by the incandescence of the electrode points.

Note.—Much of the structure in this subclass is devised to eliminate trouble arising from the emission of solids and vapors from the arc and the formation of incrustation upon the electrodes.

Search Class—

176—ELECTRIC LAMPS, subclass 64, Arc, Starting and feeding, Flaming and luminous arc, for starting and feeding in flaming arc lamps.

53. ARC, ALTERNATING-CURRENT. Arc lamps adapted to use alternating current.

54. ARC, AUTOMATIC AUXILIARIES. Arc lamps provided with devices apart from the feeding and regulating devices which operate automatically. As an example, this subclass includes globe cleaners operated by the current during the operation of the lamp and automatic indicators to tell the degree of consumption of the electrodes.

55. ARC, STARTING AND FEEDING. Arc lamps having means for starting and feeding.

Note.—Many of the patents in this subclass disclose conventional clutches for feeding the electrode.

Search Class—

176—ELECTRIC LAMPS, subclasses 110, Arc, Automatic switches; 111, Arc, Automatic switches, Consumption cut-outs, and 112, Arc, Automatic switches, Thermal switches and cut-outs, for cut-outs and automatic switches operating at the starting or extinguishing of the arc and for cut-outs and automatic switches operating under abnormal conditions.

56. ARC, STARTING AND FEEDING, CONCENTRIC-FEED MOUNTING. Arc lamps wherein the feeding electrode, the feeding electrode holder, and feeding magnet are concentrically mounted except as noted below.

Search Class—

176—ELECTRIC LAMPS, subclasses 82, Arc, Starting and feeding, Combined special clutch and operating means, Ball, for concentric feed mounted ball clutch lamps; 91, Arc, Starting and feeding, Combined special clutch and operating means, Magnetic clutch and brake, Expanding core, for concentric feed mounted expanding core magnetic clutch lamps; and 99, Arc, Starting and feeding, Electromagnetic feed, for concentric feed mounted lamps wherein the feeding electrode is directly connected to the core of the feed magnet.

57. ARC, STARTING AND FEEDING, CONCENTRIC FEED MOUNTING, INCLOSED ARC. Arc lamps of the concentric feed mounted type in which the arc is inclosed to hinder access of the atmosphere.

58. ARC, STARTING AND FEEDING, MULTIPLE ARC. Arc lamps designed for two or more arcs which burn simultaneously or successively. This particular subclass includes merely successive arc lamps not hereunder subclassified. Circuits for two or more arc lamps when burned successively are included in this subclass.

59. ARC, STARTING AND FEEDING, MULTIPLE ARC, SIMULTANEOUS. Arc lamps designed for two or more arcs which burn simultaneously.

Search Class—

176—ELECTRIC LAMPS, subclasses 12, Systems, Arc, for circuits for a plurality of arc lamps; 15, Arc and incandescent, for arc lamps containing a foreign substance rendered incandescent by the heat of the arc where the same is a conductor, and 53, Arc, Alternating-current, for arc lamps having three or more electrodes and operating on polyphase circuits.

60. ARC, STARTING AND FEEDING, MULTIPLE ARC, GEAR-BRAKE AND DETENT. Multiple arc lamps except those included under subclass 62, Arc, Starting and

CLASS 176—Continued.

feeding, Multiple arc, Arc shifting switch, Gear brake and detent, where the feed control is accomplished by means of an escapement, such as a train of gearing, connected with an electrode holder, which may be prevented from rotating by means of a brake or detent.

61. ARC, STARTING AND FEEDING, MULTIPLE ARC, ARC-SHIFTING SWITCH. Multiple arc lamps provided with switches for shifting or altering the circuit at the time the arc is shifted from one pair of electrodes to another.

Search Class—

176—ELECTRIC LAMPS, subclass 58, Arc, Starting and feeding, Multiple arc, also, for magnets which shift a clutch floor at the time the arc is shifted.

62. ARC, STARTING AND FEEDING, MULTIPLE ARC, ARC SHIFTING SWITCH, GEAR-BRAKE AND DETENT. Arc shifting switch multiple arc lamps wherein the feed control is accomplished by an escapement, such as a train of gearing connected with an electrode holder, which may be prevented from rotating by means of a brake or detent.

63. ARC, STARTING AND FEEDING, MAGAZINE. Arc lamps having receptacles for containing a supply of electrodes or arcing material, with means for automatically delivering the same to the arc as the burning electrodes are consumed.

64. ARC, STARTING AND FEEDING, FLAMING AND LUMINOUS ARC. Starting and feeding devices for use in flaming and luminous arc lamps. Many inventions in this subclass are designed to overcome difficulties in starting and feeding due to material emitted by the arc and left on the electrodes as a deposit.

Search Class—

176—ELECTRIC LAMPS, subclass 52, Arc, Flaming and luminous arc, for flaming and luminous arc lamp structure other than the starting and feeding means.

65. ARC, STARTING AND FEEDING, INCLINED AND ROTARY ELECTRODES. Arc lamps not hereunder subclassified wherein the electrodes between which the arc passes are not in alignment or in which the electrodes in feeding have a rotary motion.

Search Classes—

176—ELECTRIC LAMPS, subclasses 64, Arc, Starting and feeding, Flaming and luminous arc, for upper electrodes having a rotary motion, and 109, Arc, Stationary electrode, for arc lamps wherein the main electrodes have no relative movement.

219—ELECTRIC HEATING AND RHEOSTATS, the Arc system subclasses, for similar electrode feeding mechanism.

66. ARC, STARTING AND FEEDING, INCLINED AND ROTARY ELECTRODES, MOTOR. Inclined and rotary electrode arc lamps wherein the feed is accomplished by a motor connected to the electrode holder.

Search Class—

176—ELECTRIC LAMPS, subclasses 73, Arc, Starting and feeding, Motor, Electric; 74, Arc, Starting and feeding, Motor, Electric, Motor circuit control, and 75, Arc, Starting and feeding, Motor, Electric, Motor circuit control, Automatic switch, for special feed actuating motors.

67. ARC, STARTING AND FEEDING, INCLINED AND ROTARY ELECTRODES, POSITIVE INTERMITTENT-GRIP GEAR. Inclined and rotary electrode arc lamps wherein the feed is accomplished by gearing, which is positively operated by an intermittent-grip device.

Search Class—

176—ELECTRIC LAMPS, subclass 76, Arc, Starting and feeding, Positive intermittent-grip gear, for this type of feed applied to arc lamps with aligned electrodes.

68. ARC, STARTING AND FEEDING, INCLINED AND ROTARY ELECTRODES, SPECIAL CLUTCH. Inclined and rotary electrode arc lamps, the feeding mechanism of which comprises a special form of clutch acting upon the electrode or electrode holder or connected with the electrode holder and acting upon the frame of the lamp.

69. ARC, STARTING AND FEEDING, INCLINED AND ROTARY ELECTRODES, GEAR-BRAKE AND DETENT. Inclined and rotary electrode arc lamps wherein the feeding mechanism comprises a gear adapted to be held from rotation by friction or by the insertion of a detent into the path of some moving part of the feed mechanism.

70. ARC, STARTING AND FEEDING, INCLINED AND ROTARY ELECTRODES, CONSUMPTION FEED. Inclined and rotary electrode lamps wherein the feeding of one or more of the electrodes is regulated by their consumption or by the destruction of some obstruction to their feeding by the heat of the arc. Other means may be used for striking the arc or for keeping the electrodes properly separated.

Search Class—

176—ELECTRIC LAMPS, subclass 102, Arc, Starting and feeding, Consumption feed, for this type of feed applied to arc lamps having aligned electrodes.

71. ARC, STARTING AND FEEDING, THERMAL. Arc lamps wherein the feeding is accomplished through the agency of heat or light, except those included under subclass 70, Arc, Starting and feeding, Inclined and rotary electrodes, Consumption feed, and subclass 102, Arc, Starting and feeding, Consumption feed. Includes thermal switches controlling the feed regulating circuits.

Search Class—

176—ELECTRIC LAMPS, subclass 112, Arc, Automatic switches, Thermal switches and cut-outs, for thermal cut-outs.

CLASS 176—Continued.

72. ARC, STARTING AND FEEDING, MOTOR. Miscellaneous are lamps wherein the feed is accomplished by a motor connected to the electrode holder.

Search Class—

- 176—ELECTRIC LAMPS, subclass 66, Arc, Starting and feeding, Inclined and rotary electrodes, Motor.

73. ARC, STARTING AND FEEDING, MOTOR, ELECTRIC. Arc lamps wherein the feed is accomplished by means of an electric motor connected to the electrode holder.

Search Class—

- 176—ELECTRIC LAMPS, subclasses 67, Arc, Starting and feeding, Inclined and rotary electrodes, Positive intermittent-grip gear, and 76, Arc, Starting and feeding, Positive intermittent-grip gear, for all means whereby the electrode may be automatically released from the electric motor or intermittent-grip gear feeding mechanism.

74. ARC, STARTING AND FEEDING, MOTOR, ELECTRIC, MOTOR-CIRCUIT CONTROL. Electric motor feed are lamps not hereunder subclassified, wherein the feed of the electrodes is effected by control of the circuit of the field or armature of the motor.

75. ARC, STARTING AND FEEDING, MOTOR, ELECTRIC, MOTOR CIRCUIT CONTROL, AUTOMATIC SWITCH. Motor circuit control motor feed are lamps wherein the motor circuit is controlled by an automatic switch. Includes means for automatically changing the commutation of the motor.

76. ARC, STARTING AND FEEDING, POSITIVE INTERMITTENT-GRIP GEAR. Arc lamps wherein the feeding is accomplished by gearing which is positively operated by an intermittent-grip device.

Search Class—

- 176—ELECTRIC LAMPS, subclass 67, Arc, Starting and feeding, Inclined and rotary electrodes, Positive intermittent-grip gear, for this type of feed applied to lamps having inclined or rotary electrodes.

77. ARC, STARTING AND FEEDING, POSITIVE FEED-CLUTCH. Arc lamps wherein the electrodes are fed positively by means of a clutch, the clutch moving with the electrode as it feeds. Generally the position of the lamp does not affect the feed.

78. ARC, STARTING AND FEEDING, POSITIVE FEED CLUTCH, SEPARATE HOLDING CLUTCH. Positive feed clutch are lamps wherein the feeding mechanism comprises two separate clutches, one for advancing the electrode and the other for holding the same against reverse movement during the retraction of the former.

79. ARC, STARTING AND FEEDING, POSITIVE FEED-CLUTCH, COMBINED FEEDING AND HOLDING-CLUTCH. Positive feed clutch are lamps wherein the feeding mechanism comprises a clutch having means for positively advancing the electrode and means for holding the electrode against reverse movement during the retraction of the former means.

Note.—This subclass includes single clutches, which combine the functions of the feeding and holding clutches included in subclass 78 above.

80. ARC, STARTING AND FEEDING, COMBINED SPECIAL CLUTCH AND OPERATING MEANS. Arc lamps wherein the feeding mechanism comprises the combination of a special clutch with special clutch operating means.

Search Class—

- 176—ELECTRIC LAMPS, subclasses 68, Arc, Starting and feeding, Inclined and rotary electrodes, Special clutch, for special clutches in arc lamps; 105, Arc, Starting and feeding, Clutches, and the subclasses thereunder, for special clutches for arc lamps.

81. ARC, STARTING AND FEEDING, COMBINED SPECIAL CLUTCH AND OPERATING MEANS, AUTOMATIC SWITCH. Combined special clutch and operating means are lamps which contain an automatic switch, for whatever purpose employed, that is operated by an excessive movement of some part of the feed or starting mechanism or which contain an automatic switch which is operated repeatedly during the burning of the lamp. This subclass includes automatically operated cut-outs and rheostats as above limited.

Search Class—

- 176—ELECTRIC LAMPS, subclass 111, Arc, Automatic switches, Consumption cut-outs, for consumption cut-outs operated when the electrodes have been consumed to a predetermined extent.

82. ARC, STARTING AND FEEDING, COMBINED SPECIAL CLUTCH AND OPERATING MEANS, BALL. Combined special clutch and operating means are lamps wherein the clutch comprises a ball, ring, or disk, which serves to grip the electrode or electrode holder by being wedged between the same and an adjacent part, in many cases by being rolled along the electrode holder.

83. ARC, STARTING AND FEEDING, COMBINED SPECIAL CLUTCH AND OPERATING MEANS, DOUBLE DOG. Combined special clutch and operating means are lamps not hereunder subclassified wherein the clutch comprises two or more dogs or blocks pivoted or swinging in such a manner as to engage the electrode or electrode holder to clutch the same. This subclass includes clutching cams.

CLASS 176—Continued.

Search Class—

- 176—ELECTRIC LAMPS, subclass 103, Arc, Starting and feeding, Clutches, Double dog, for double dog clutches.

84. ARC, STARTING AND FEEDING, COMBINED SPECIAL CLUTCH AND OPERATING MEANS, DOUBLE DOG, MAGNETIC CLUTCH. Combined special clutch and operating means are lamps of the double dog clutch type wherein the dogs of the clutch are individual armatures or pole pieces or are connected to separate armatures, except such lamps wherein the clutch is of the electromagnetic expanding type.

Search Class—

- 176—ELECTRIC LAMPS, subclasses 80, Arc, Starting and feeding, Combined special clutch and operating means, and 81, Arc, Starting and feeding, Combined special clutch and operating means, Automatic switch, for clutch dogs consisting of spring armatures, but not pivoted; 90, Arc, Starting and feeding, Combined special clutch and operating means, Magnetic clutch and brake, and 91, Arc, Starting and feeding, Combined special clutch and operating means, Magnetic clutch and brake, Expanding core, for other magnetic clutches.

85. ARC, STARTING AND FEEDING, COMBINED SPECIAL CLUTCH AND OPERATING MEANS, DOUBLE DOG, AUTOMATIC SWITCH. Combined special clutch and operating means are lamps of the double dog clutch type which contain an automatic switch, for whatever purpose used, which is operated by an excessive movement of some part of the feed or starting mechanism or which contain an automatic switch, which is operated repeatedly during the burning of the lamp. This subclass includes automatically operated cut-outs and rheostats, as above limited.

86. ARC, STARTING AND FEEDING, COMBINED SPECIAL CLUTCH AND OPERATING MEANS, PIVOT-DOG. Combined special clutch and operating means are lamps wherein the clutch comprises a single pivoted dog adapted to engage the electrode or electrode holder.

Search Class—

- 176—ELECTRIC LAMPS, subclasses 80, Arc, Starting and feeding, Combined special clutch and operating means, and 81, Arc, Starting and feeding, Combined special clutch and operating means, Automatic switch, for clutches comprising a freely pivoted block, which is made to engage the electrode holder by moving its pivotal point; and 107, Arc, Starting and feeding, Clutches, Pivot dog, for pivot dog clutches for arc lamps.

87. ARC, STARTING AND FEEDING, COMBINED SPECIAL CLUTCH AND OPERATING MEANS, PIVOT DOG, AUTOMATIC SWITCH. Combined special clutch and operating means are lamps of the pivot dog type which contain an automatic switch, for whatever purpose used, which is operated by an excessive movement of some part of the feed or starting mechanism or which contain an automatic switch, which is operated repeatedly during the burning of the lamp. This subclass includes automatically operated cut-outs and rheostats, as above limited.

88. ARC, STARTING AND FEEDING, COMBINED SPECIAL CLUTCH AND OPERATING MEANS, RING. Combined special clutch and operating means are lamps wherein the clutch comprises a ring, which is adapted to be cant to grip the electrode or electrode holder.

89. ARC, STARTING AND FEEDING, COMBINED SPECIAL CLUTCH AND OPERATING MEANS, RING, AUTOMATIC SWITCH. Combined special clutch and operating means are lamps of the ring clutch type which contain an automatic switch, for whatever purpose used, which is operated by an excessive movement of some part of the feed or starting mechanism or which is operated repeatedly during the burning of the lamp. This subclass includes automatically operated cut-outs and rheostats, as above limited.

90. ARC, STARTING AND FEEDING, COMBINED SPECIAL CLUTCH AND OPERATING MEANS, MAGNETIC CLUTCH AND BRAKE. Combined special clutch and operating means are lamps not hereunder subclassified wherein the clutch block is an armature or pole of a magnet or is rigidly connected with an armature or pole of a magnet. This subclass also includes all magnetic gear brakes and magnetic dampers in class 176.

Search Class—

- 176—ELECTRIC LAMPS, subclass 84, Arc, Starting and feeding, Combined special clutch and operating means, Double dog, Magnetic clutch, for double dog magnetic clutch are lamps.

91. ARC, STARTING AND FEEDING, COMBINED SPECIAL CLUTCH AND OPERATING MEANS, MAGNETIC CLUTCH AND BRAKE, EXPANDING CORE. Combined special clutch and operating means are lamps of the magnetic clutch and brake type wherein clutch blocks form parts of a split tube or the like, located usually within a magnet, and which act as the core of the magnet, the movement of the several parts of the tube core under the magnetic influence operating to clutch the electrode or electrode holder.

92. ARC, STARTING AND FEEDING, AUTOMATIC SWITCH. Arc lamps except as classified under the specific type of feed mechanism which contain an automatic switch, for whatever purpose used, which is operated by an excessive movement of some part of the feed or starting mechanism or which is operated repeatedly during the burning of the lamp. Includes automatically operated cut-outs and rheostats, as above limited. Does not include consumption cut-outs.

CLASS 176—Continued.

93. ARC, STARTING AND FEEDING, GEAR-BRAKE. Arc lamps wherein the feeding mechanism comprises a gear adapted to be held from rotation by a frictional brake or pressure of a cam.

Search Class—

- 176—ELECTRIC LAMPS, subclasses 60, Arc, Starting and feeding, Multiple arc, Gear brake and detent; 62, Arc, Starting and feeding, Multiple arc, Arc shifting switch, Gear brake and detent; 69, Arc, Starting and feeding, Inclined and rotary electrodes, Gear brake and detent; and 72, Arc, Starting and feeding, Motor, and the subclasses thereunder, for analogous structure; and 90, Arc, Starting and feeding, Combined special clutch and operating means, Magnetic clutch and brake, for magnetic brakes.

94. ARC, STARTING AND FEEDING, GEAR BRAKE, MULTIPLE-ARMATURE OPERATED. Gear brake arc lamps wherein the starting and feeding is accomplished by two or more separate armatures, each moving different parts of the starting or feeding mechanism or the same parts in a different manner. Does not include those lamps wherein the armatures operate to move the same parts merely in opposite directions nor wherein one armature merely operates a switch. Many of the patents in this subclass include lamps wherein the arc is started by one magnet and further control is effected by another.

Search Class—

- 176—ELECTRIC LAMPS, subclass 97, Arc, Starting and feeding, Gear detent, Multiple armature operated, for analogous inventions in gear detent lamps.

95. ARC, STARTING AND FEEDING, GEAR BRAKE, AUTOMATIC SWITCH. Gear brake arc lamps which contain an automatic switch, for whatever purpose employed, which is operated by an excessive movement of some part of the feed or starting mechanism or which is operated repeatedly during the burning of the lamp. Includes automatically operated cut-outs and rheostats, as above limited. Does not include consumption cut-outs.

96. ARC, STARTING AND FEEDING, GEAR-DETENT. Arc lamps not hereunder subclassified wherein the feeding mechanism comprises gearing connected with an electrode, which is prevented from rotation by the insertion of a detent into the path of a moving part of the feed mechanism. In many cases the detent prevents the operation of an escape-ment.

Search Class—

- 176—ELECTRIC LAMPS, subclasses 60, Arc, Starting and feeding, Multiple arc, Gear brake and detent; 62, Arc, Starting and feeding, Multiple arc, Arc shifting switch, Gear brake and detent, and 69, Arc, Starting and feeding, Inclined and rotary electrodes, Gear brake and detent, when searching this subclass; 72, Arc, Starting and feeding, Motor, and the subclasses thereunder.

97. ARC, STARTING AND FEEDING, GEAR DETENT, MULTIPLE-ARMATURE OPERATED. Gear detent arc lamps wherein the starting and feeding is accomplished by two or more separate armatures, each moving different parts of the starting or feeding mechanism or the same part in a different manner. Does not include those lamps wherein the armatures operate to move the same parts merely in opposite directions nor wherein one armature merely operates a switch. Many of the patents in this subclass include lamps wherein the arc is started by one magnet and further control is effected by another.

Search Class—

- 176—ELECTRIC LAMPS, subclass 94, Arc, Starting and feeding, Gear brake, Multiple armature operated, for analogous inventions in gear brake lamps.

98. ARC, STARTING AND FEEDING, GEAR DETENT, AUTOMATIC SWITCH. Gear detent arc lamps which contain an automatic switch, for whatever purpose employed, which is operated by an excessive movement of some part of the feed or starting mechanism or which is operated repeatedly during the burning of the lamp. Includes automatically operated cut-outs and rheostats, as above limited. Does not include consumption cut-outs.

99. ARC, STARTING AND FEEDING, ELECTROMAGNETIC FEED. Miscellaneous arc lamps wherein the feed is accomplished by electromagnetic action. This subclass includes patents disclosing specific mechanical means for feeding the electrodes and differs from subclass 55, Arc, Starting and feeding, wherein such means is disclosed conventionally. Many patents in this subclass disclose lamps wherein the electrode holder is positively connected to an armature or the core of a solenoid.

Search Class—

- 176—ELECTRIC LAMPS, subclasses 65, Arc, Starting and feeding, Inclined and rotary electrodes, and the subclasses thereunder; 72, Arc, Starting and feeding, Motor, and the subclasses thereunder; 77, Arc, Starting and feeding, Positive feed clutch, and the subclasses thereunder; 80, Arc, Starting and feeding, Combined special clutch and operating means, and the subclasses thereunder; 93, Arc, Starting and feeding, Gear brake, and the subclasses thereunder, and 96, Arc, Starting and feeding, Gear detent, and the subclasses thereunder.

100. ARC, STARTING AND FEEDING, ELECTROMAGNETIC FEED, FLUID TRANSMISSION. Electromagnetic feed arc lamps wherein the movement of the electrodes is accomplished through the agency of a fluid.

CLASS 176—Continued.

Search Class—

- 176—ELECTRIC LAMPS, subclasses 70, Arc, Starting and feeding, Inclined and rotary electrodes, Consumption feed, 102, Arc, Starting and feeding, Consumption feed; and 108, Arc, Starting and feeding, Dampers and dash pots, for analogous structure.

101. ARC, STARTING AND FEEDING, ELECTROMAGNETIC FEED, AUTOMATIC SWITCH. Electromagnetic feed arc lamps which contain an automatic switch, for whatever purpose employed, which is operated by an excessive movement of some part of the feed or starting mechanism or which is operated repeatedly during the burning of the lamp. Includes automatically operated cut-outs and rheostats, as above limited. Does not include consumption cut-outs.

102. ARC, STARTING AND FEEDING, CONSUMPTION FEED. Arc lamps wherein the feed is accomplished by the consumption of the electrodes or by the destruction of obstructions to the motion of the electrodes by the heat of the arc. The feed may be accomplished by the melting of an obstruction to feed, or by consumption of the end of the electrode, or by loss in weight of the electrode. Where the electrode is directly connected to a magnetic core the movement of which effects the feeding, the patent is placed in Electromagnetic feed, although loss in weight may effect the feeding.

Search Class—

- 176—ELECTRIC LAMPS, subclasses 70, Arc, Starting and feeding, Inclined and rotary electrodes, Consumption feed, for consumption feed inclined and rotary electrode arc lamps; and 71, Arc, Starting and feeding, Thermal, for feed accomplished by heat but not falling within the definition of this subclass.

103. ARC, STARTING AND FEEDING, MANUAL. Arc lamps wherein the starting or feeding is accomplished by hand. Includes means for manually operating or locking the feeding mechanism.

Search Classes—

- 176—ELECTRIC LAMPS, the motor subclasses under Arc, for analogous structure.

- 219—ELECTRIC HEATING AND RHEOSTATS, Arc system subclasses, for similar electrode feeding structure.

104. ARC, STARTING AND FEEDING, SPECIAL STARTERS. Arc lamps provided with means for starting the arc other than merely by the separation of the burning electrodes.

Search Class—

- 176—ELECTRIC LAMPS, subclasses 64, Arc, Starting and feeding, Flaming and luminous arc, for such means applied to flaming arc lamps; and 65, Arc, Starting and feeding, inclined and rotary electrodes, and the subclasses thereunder, for "strikers" in inclined and rotary electrode lamps.

105. ARC, STARTING AND FEEDING, CLUTCHES. Clutches for starting or feeding arc lamps. The clutch operating mechanism is conventional.

Search Classes—

- 176—ELECTRIC LAMPS, subclass 80, Arc, Starting and feeding, Combined special clutch and operating means, and appropriate subclasses thereunder.

- 74—MACHINE ELEMENTS, subclasses 53, Intermittent-grip devices; 54, Intermittent-grip devices, Ratchet, and 55, Intermittent-grip devices, Strap and dog or ball, for rod clutches capable of an intermittent grip action and of general application.

106. ARC, STARTING AND FEEDING, CLUTCHES, DOUBLE DOG. Clutches for starting or feeding arc lamps which comprise two or more dogs or blocks pivoted or swinging in such a manner as to engage the electrode or electrode holder. Includes multiple clutching cams. The clutch operating mechanism is conventional.

Search Class—

- 176—ELECTRIC LAMPS, subclasses 83, Arc, Starting and feeding, Combined special clutch and operating means, Double dog; 84, Arc, Starting and feeding, Combined special clutch and operating means, Double dog, Magnetic clutch, and 85, Arc, Starting and feeding, Combined special clutch and operating means, Double dog, Automatic switch.

107. ARC, STARTING AND FEEDING, CLUTCHES, PIVOT DOG. Clutches for starting or feeding arc lamps comprising a single pivoted dog. The clutch operating mechanism is conventional.

Search Class—

- 176—ELECTRIC LAMPS, subclasses 86, Arc, Starting and feeding, Combined special clutch and operating means, Pivot dog, and 87, Arc, Starting and feeding, Combined special clutch and operating means, Pivot dog, Automatic switch; and 105, Arc, Starting and feeding, Clutches, for clutches comprising a pivoted block, which is made to grip the electrodes by moving its pivotal point.

108. ARC, STARTING AND FEEDING, DAMPERS AND DASH-POTS. Devices for impeding motion in the starting or feed mechanism for arc lamps. Includes devices in the nature of brakes to prevent abrupt feed of the electrodes. Does not include dash pots which are parts of electromagnets or solenoids.

Search Class—

- 176—ELECTRIC LAMPS, subclasses 53, Arc, Alternating-current; 93, Arc, Starting and feeding, Gear brake, and the subclasses thereunder; 96, Arc, Starting and feeding, Gear detent, and the subclasses thereunder, and 114, Arc, Magnets, armatures, and magnet supports; 90, Arc, Starting and feeding, Combined

CLASS 176—Continued.

special clutch and operating means, Magnetic clutch and brake, for magnetic brakes; 100, Arc, Starting and feeding, Electromagnetic feed, Fluid transmission, for similar structure.

109. ARC, STATIONARY ELECTRODE. Arc lamps, except liquid electrode arc lamps, wherein the electrodes have no relative movement. Includes electric candles and their holders.

Search Class—

176—ELECTRIC LAMPS, subclass 65, Arc, Starting and feeding, Inclined and rotary electrodes, and the subclasses thereunder, for arc lamps in which the electrodes remain stationary during normal operation but wherein the arc is started by a separation of the main electrodes.

110. ARC, AUTOMATIC SWITCHES. Miscellaneous automatic switches peculiar to arc lamps.

Note.—Includes automatically operated cut-outs and rheostats, as above limited. Does not include automatic switches operated by an excessive movement of the electrode feeding mechanism nor automatic switches designed to operate repeatedly during the burning of the lamp; nor automatic switches in liquid electrode arc lamps; nor automatic switches in arc lamps where the same is positively included in the definition of some subclass under 55, Arc, Starting and feeding; nor Automatic switches disclosed in patents classified in subclass 64, Arc, Starting and feeding, Flaming and luminous arc.

Search Class—

175—ELECTRICITY, GENERAL APPLICATIONS, appropriate subclasses, for automatic switches of general application.

111. ARC, AUTOMATIC SWITCHES, CONSUMPTION CUT-OUTS. Cut-outs for arc lamps which operate when an electrode is consumed to a certain extent, except such as are operated directly by heat.

Search Class—

176—ELECTRIC LAMPS, subclasses 55, Arc, Starting and feeding, and 103, Arc Starting and feeding, Manual, for devices for cutting out lamps by breaking the arc; 112, Arc, Automatic switches, Thermal switches and cut-outs, for cut-outs operated directly by heat.

112. ARC, AUTOMATIC SWITCHES, THERMAL SWITCHES AND CUT-OUTS. Switches and cut-outs for arc lamps operated directly by heat.

Note.—Automatic switches closing a circuit operating the feed mechanism are placed in subclass 71, Arc, Starting and feeding, Thermal, or a superior subclass, and cross-referenced into this subclass.

113. ARC, INCLOSED ARC. Devices for inclosing the arc in arc lamps to hinder access of the atmosphere.

Search Classes—

176—ELECTRIC LAMPS, subclass 57, Arc, Starting and feeding, Concentric feed mounting, Inclosed arc, for arc inclosures in concentric feed mounted lamps.

240—ILLUMINATION, appropriate subclasses, for arc lamp globes and protectors.

114. ARC, MAGNETS, ARMATURES, AND MAGNET-SUPPORTS. Special magnets, armatures, and supports for magnets particularly adapted for use in arc lamps, except liquid electrode arc lamps.

Search Classes—

176—ELECTRIC LAMPS, subclass 53, Arc, Alternating-current, for magnets especially designed for alternating current.

175—ELECTRICITY, GENERAL APPLICATIONS, subclass 21, Electromagnets, for electromagnets of general application.

115. ARC, CASES AND FRAMES. In addition to holding, inclosing, and supporting means for mechanism of arc lamps, conductors and accessories of the lamp frame not hereunder subclassified, except liquid electrode arc lamps.

Search Classes—

176—ELECTRIC LAMPS, subclasses 51, Arc, Side reflector type, 116, Arc, Cases and frames, Resistances and manual switches, and 117, Arc, Cases and frames, Arc confining, reflecting, for frame and casing construction; 113, Arc, Inclosed arc, for supports for arc inclosing globes; 114, Arc, Magnets, armatures, and magnet supports, and 116, Arc, Cases and frames, Resistances and manual switches, for ventilating cases and mechanism.

240—ILLUMINATION, subclasses 111, Shade, reflector, or globe supports, and the subclasses thereunder, for globe supporting frames, and 91, Light supports, Harps for lamp-supporting frames.

116. ARC, CASES AND FRAMES, RESISTANCES AND MANUAL SWITCHES. Resistances and rheostats in arc lamps and manual switches in arc lamps.

Search Classes—

219—ELECTRIC HEATING AND RHEOSTATS, appropriate subclasses, for rheostats of general application.

240—ILLUMINATION, subclass 52, Light supports, and the subclasses thereunder, for switches in arc lamp head boards.

117. ARC, CASES AND FRAMES, ARC CONFINING, REFLECTING. Means for confining the arc in arc lamps, "economizers," and reflectors, except such as are classified in class 240, ILLUMINATION.

Search Class—

176—ELECTRIC LAMPS, subclasses 15, Arc and incandescent, for means for confining the arc; and 102, Arc, Starting and feeding, Consumption feed, for analogous structure.

CLASS 176—Continued.

118. ARC, MAGNETIC INFLUENCE AND DEFLECTION OF ARC. Means for subjecting the arc in arc lamps to the influence of a magnetic field. Includes means for deflecting the arc by other forces than magnetic.

119. ARC, ELECTRODE HOLDERS. Means for holding the electrodes and forming electrical contact therewith in arc lamps, except liquid electrode arc lamps.

Search Classes—

176—ELECTRIC LAMPS, subclass 113, Arc, Inclosed arc, for electrode holders combined with arc inclosing globe supports.

219—ELECTRIC HEATING AND RHEOSTATS, for similarly constructed electrode holders.

248—SUPPORTS, appropriate subclasses, for similar supports of general application.

120. ARC, ELECTRODE HOLDERS, MOVABLE CONTACT. Movable electrode holders provided with means for forming sliding or rolling electrical contact with some fixed portion of the lamp.

121. ARC, ELECTRODE STRUCTURE. Structure of the conductors in arc lamps between which the arc passes. Includes electrodes supplied with wicks or other means for furnishing a hydrocarbon to the arc.

Search Class—

176—ELECTRIC LAMPS, subclasses 50, Arc, Liquid electrode, Solid electrode structure and seals, for solid electrodes for liquid electrode arc lamps; 52, Arc, Flaming and luminous arc, and 64, Arc, Starting and feeding, Flaming and luminous arc, for flaming arc electrodes; 70, Arc, Starting and feeding, Inclined and rotary electrodes, Consumption feed; 102, Arc, Starting and feeding, Consumption feed, and 109, Arc, Stationary electrode.

122. GAS AND VAPOR. Lamps in which the light is produced by an electric discharge through a gas or vapor, the phenomenon not being an arc. In general the discharge takes place between electrodes through a gas or vapor within a container.

123. GAS AND VAPOR, LUMINOUS ELECTRODE. Gas and vapor lamps containing electrodes or conductive material and constructed to be operated under such conditions that the material of the electrodes becomes luminous.

124. GAS AND VAPOR, SPECIAL CURRENT-SUPPLY. Means in combination with gas and vapor electric lamps for supplying energy of a particular character thereto. In many cases these means are current interrupters or devices for producing electrical oscillations. Does not include conventional means for producing direct, alternating, or pulsating current.

Search Class—

173—ELECTRICITY, MOTIVE POWER, subclass 231, Transmission of power, Frequency changers, for interrupters *per se*.

125. GAS AND VAPOR, GAS AND VAPOR ADMITTING. Gas and vapor lamps provided with means for admitting gas or vapor to the interior thereof or for withdrawing gas or vapor therefrom.

Search Classes—

176—ELECTRIC LAMPS, subclass 2, Manufacture and repair, Exhaustion and gas charging, for gas charging and exhausting limited to this class.

175—ELECTRICITY, GENERAL APPLICATIONS, subclass 314, Special ray apparatus, Tubes, for similar means applied to X-ray apparatus.

126. GAS AND VAPOR, ELECTRODES, TERMINALS, AND SEALS. Terminals of the metallic circuit in gas or vapor lamps and means for sealing the same to the bulb or tube container.

Search Classes—

176—ELECTRIC LAMPS, subclasses 50, Arc, Liquid electrode, Solid electrode structure and seals, and 121, Arc, Electrode structure, for analogous structure; and 124, Gas and vapor, Special current supply.

175—ELECTRICITY, GENERAL APPLICATIONS, subclass 314, Special ray apparatus, Tubes, for analogous structure in X-ray tubes.

127. FILAMENT AND GLOWER COMPOSITIONS, CARBON CONTAINING. Incandescing compositions for electric lamps that contain carbon, except those classified below, and methods of producing the same. The classification of filament and glower compositions is upon the presence of chemicals in the filaments or glowers regardless of whether they enter into chemical combination or are present as physical mixtures.

Search Classes—

176—ELECTRIC LAMPS, subclasses 2, Manufacture and repair, Exhaustion and gas charging, for processes involving the heating of filaments in various atmospheres during exhaustion; 4, Manufacture and repair, Apparatus, Filaments and glowers, for apparatus and methods of forming and repairing filaments; 7, Manufacture and repair, Processes, for operations upon the filament independent of its composition.

18—PLASTICS, subclasses 8, Molding devices, Filament forming, and 54, Processes, Filament forming, for methods and apparatus used in forming filaments.

23—CHEMICALS, appropriate subclasses, for chemical compositions.

128. FILAMENT AND GLOWER COMPOSITIONS, CARBON AND SALT. Incandescing compositions for electric lamps that contain the element carbon and in addition a chemical salt or salts and methods of producing the same.

CLASS 176—Continued.

129. **FILAMENT AND GLOWER COMPOSITIONS, CARBON AND OXID.** Incandescing compositions for electric lamps that contain carbon and in addition an oxid or oxids and methods of producing the same.
130. **FILAMENT AND GLOWER COMPOSITIONS, CARBON AND METAL.** Incandescing compositions for electric lamps that contain carbon and a metal or metals and methods of producing the same unless the metal is in the form of an oxid or salt. This subclass, however, includes carbids of metals.
131. **FILAMENT AND GLOWER COMPOSITIONS, NON-CARBON.** Incandescing compositions for electric lamps, except as hereunder subclassified, that do not contain carbon and methods of producing the same. Many of these are compositions for pyroelectric lamp glowers.
- Note.**—These compositions are similar to many found in class 67, ILLUMINATING BURNERS, subclass 99, Gaseous fuel burners, Incandescent, Mantle compositions.

132. **FILAMENT AND GLOWER COMPOSITIONS, NON-CARBON, METALS AND ALLOYS.** Incandescing compositions for electric lamps composed entirely of a metal or a mixture or an alloy of metals.

Search Class—

75—METALLURGY, subclass 1, Alloys, for alloys.

133. **ELECTRODE COMPOSITIONS, CARBON-CONTAINING.** Electrode compositions for electric lamps, that contain carbon and methods of producing the same. The classification of electrode compositions is upon the presence of chemicals in the electrodes regardless of whether they enter into chemical combination or are present as physical mixtures.

CLASS 176—Continued.

Search Classes—

- 176—ELECTRIC LAMPS, subclasses 5, Manufacture and repair, Apparatus, Electrodes, for apparatus and methods of forming electrodes; and 7, Manufacture and repair, Processes, for operations upon the electrodes independent of their composition.
- 23—CHEMICALS, appropriate subclasses, for chemical compositions.
- 171—ELECTRICITY, GENERATION, subclass 210, Magneto-electric, Brushes and holders, for dynamo electric machine brushes.
- 202—CHARCOAL AND COKE, appropriate subclasses, for carbonization for production of fuel.
- 204—ELECTROCHEMISTRY, subclass 50, Batteries, Cathodes, for carbon compositions capable of use as cathodes, although of more general application.
- 219—ELECTRIC HEATING AND RHEOSTATS, subclass 75, Resistance elements, Carbon, for similar compositions for resistance elements.
134. **ELECTRODE COMPOSITIONS, CARBON AND OXID OR SALT.** Electrodes for electric lamps that contain carbon and in addition an oxid or oxids or that contain carbon and in addition a chemical salt or salts, and methods of producing the same.
135. **ELECTRODE COMPOSITIONS, CARBON AND METAL.** Electrodes for electric lamps that contain carbon and a metal or metals and methods of producing the same, unless the metal exists in the form of an oxid or salt. This subclass, however, includes carbids of metals.
136. **ELECTRODE COMPOSITIONS, NON-CARBON.** Electrode compositions for electric lamps that do not contain the element carbon and methods of forming the same. Includes many flaming or luminous arc electrode compositions.

CLASS 179.—TELEPHONY.

DEFINITIONS.

Class.

This class is limited to instruments and their combinations effecting transmission of spoken or other sounds by means of electricity or electricity and other radiant energy.

Mechanical telephones transmitting speech through the mechanical or molecular vibrations of stretched wires are classified in class 181, Acoustics, subclass 29, Mechanical telephones.

Subclasses.

1. **SYSTEMS.** Combinations of devices for effecting the transmission of speech. Broadly, this subclass includes a plurality of telephone instruments in circuit, but in its more restricted meaning includes transmitting and receiving instruments at subscribers' or central stations for signaling or talking and their connections. No distinction is made here between circuits and systems, all being grouped under Systems. This subclass is miscellaneous, including all types of systems not otherwise classifiable.

2. **SYSTEMS, COMPOSITE.** Telephone systems combined with other electrical systems, as clock, power, fire, burglar, police, or telegraph; also, systems of superposed currents, as the superposition of telephone on telegraph, or light, alternating, and phase currents.

Search Class—

178—TELEGRAPHY, subclass 300, Superposed current.

3. **SYSTEMS, COMPOSITE, TELEGRAPHY.** Systems in which the circuits between stations are used for the transmission of either telephone or telegraph messages, either separately or simultaneously, the majority of patents classified here being for superposed currents, telephoning and telegraphing being simultaneous. This subclass also includes combination devices used in telegraphy and telephony, as telegraphic sounders and telephone transmitters or receivers structurally united.

4. **SYSTEMS, COMPOSITE, TELEGRAPHY, METALLIC CIRCUIT.** Combined telegraph and telephone circuits and systems in which the transmission is over a metallic circuit, usually in telephoning.

5. **SYSTEMS, COMPOSITE, FIRE OR POLICE.** Combined systems in which fire, burglar, or police calls or alarms are sent over the telephone circuits separately or simultaneously. This subclass would therefore include telephone calls in which a specific signal is recorded.

6. **SYSTEMS, COMBINED TELEPHONE AND PHONOGRAPH.** Systems involving the use of a phonograph in connection with telephone systems, except such as are classified in class 181, Acoustics, subclass 1, Telegraphophones. It includes inventions in which the use of the phonograph is incidental, in which the record is made simultaneously with the transmission of speech between stations and the record is made at either station, or inventions in which sound-waves from a phonograph record are reproduced on a telephone line to repeat messages sent or to announce facts, as that "the line is busy," "will return at —," "call again," etc.

Search Class—

181—ACOUSTICS, subclass 1, Telegraphophones.

7. **SYSTEMS, REGISTER.** Systems involving devices for counting or charging telephone calls or connections which are so intimately associated and claimed in combination with telephone systems, telephones, telephone switches and calls, etc., as to be inseparable therefrom as independent machines. The miscellaneous class includes substation instruments manually operated at the substation by the subscriber. All others will be found in the special subclasses hereinafter mentioned. All recording or time-registering instruments *per se* are excluded and will be found in classes indicated below.

Search Classes—

161—TIME-CONTROLLING MECHANISM, subclass 19, Timing mechanism, Telephone-service, for devices measuring the time the telephone is used as a basis of the charge.

234—RECORDERS, appropriate subclasses, especially subclass 33.5, Telephone, for devices in which a record is made or printed.

235—REGISTERS, for registers *per se*.

8. **SYSTEMS, REGISTER, CENTRAL.** Systems having a register or counter installed at a central office instead of at the subscriber's instrument or substation. This particular subclass mostly includes registers operated or set manually, either by the central operator or by the subscriber, through the use of a key, push-button, or rod, etc.

CLASS 179—Continued.

9. **SYSTEMS, REGISTER, CENTRAL, AUTOMATIC.** Systems installing a register at a central station and actuated by the usual motions in calling or connecting. No other or extra motions are required, and the system is automatic to that extent only. In this subclass the subscriber's removal or replacement of the receiver or transmitter or calling, ringing off, etc., finally sets the register in the subscriber's line.

10. **SYSTEMS, REGISTER, CENTRAL, AUTOMATIC, CENTRAL CONTROL.** Centrally-installed registers actuated at central by the usual motions made by the operator at central in connecting or calling.

Note.—See note to subclass 12, Systems, Register, Automatic, Central control.

11. **SYSTEMS, REGISTER, AUTOMATIC.** The substation registers of these systems are located at the substations and are automatic to the extent that no further motions are required than those usually made in calling and connecting, as in removing or replacing the receiver, placing receiver or transmitter in position for use at the substation, or plugging into the spring-jacks at central. It does not include manually operated registers.

12. **SYSTEMS, REGISTER, AUTOMATIC, CENTRAL CONTROL.** Automatic substation registers which are finally actuated or set by the operator at central in making the usual movements for connections.

Note.—Though many devices classified under Central control are only operated through the co-operation of subscriber and operator, the line of classification is here drawn that the devices in this subclass shall be finally set or actuated through the usual motions of the operator at central in making connections. No extra manual motions are made.

13. **SYSTEMS, REGISTER, CENTRAL CONTROL.** Substation instruments which are finally actuated and the count made through a manual operation performed at central.

Note.—The note to subclass 12, Systems, Automatic, Central control, applies here, except that additional motions by central operator, as in operating a key, are required besides the usual motions in uniting the circuits of subscribers.

14. **SYSTEMS, REGISTER, KEY AND LOCK.** Substation devices actuated by a special key manipulated by the subscriber. It includes means to inform central of the setting of the register.

Note.—The special keys are in most cases adapted to be carried by the subscribers and used when they desire to telephone. The key is not in any sense of the nature of telegraph-keys or circuit-closers.

15. **SYSTEMS, MULTIPLEX.** Systems providing for the simultaneous transmission of more than one message over the same circuit without interference and includes systems of duplex, multiple, and tuned or harmonic transmission. The circuits referred to may include phantom circuits—that is, those in which the line forms a part of the circuit between subscribers.

16. **SYSTEMS, AUTOMATIC.** Systems in which connections between subscribers are mechanically made at a central station, and in this subclass and all its subclasses, except Semi-automatic, without the aid or presence of an operator at the central office or exchange.

17. **SYSTEMS, AUTOMATIC, POLYSTATION-LINES.** The systems included in this subclass involve all those provided with a plurality of stations on the same circuit, forming the so-called "party-line," and connected to an automatically operated central.

18. **SYSTEMS, AUTOMATIC, PERCENTAGE.** Automatic systems in which the number of selectors, switches, or auxiliary apparatus used in establishing connections at central is a percentage of the number of subscribers and equal or proportional to the maximum number of simultaneous calls.

Note.—There is not a separate switch for each subscriber's line.

19. **SYSTEMS, AUTOMATIC, LOCK-OUT.** Automatic systems provided with means for preventing interference, thus securing privacy in communication. This particular subclass of automatic lock-out systems includes those establishing connections by rotary devices.

Note.—Selective systems for signaling only are not included herein.

Search Class—

179—TELEPHONY, subclasses 17, Systems, Automatic, Polystation-lines, and 18, Systems, Automatic, Percentage.

20. **SYSTEMS, AUTOMATIC, LOCK-OUT, CENTRAL ENERGY.** Such lock-out systems as use energy supplied from a central point either for calling or for talking or for both, but not for establishing connections or operating the selectors or connecting devices at central. These systems utilizing a common battery or equivalent are not limited to those using such centralized energy for all purposes.

CLASS 179—Continued.

21. **SYSTEMS, AUTOMATIC, LOCK-OUT, COMBINED ROTARY AND NON-ROTARY.** Automatic systems including means to prevent interference and in which the switching mechanism at central secures connections by rotary and non-rotary means, the non-rotary means being such as produce longitudinal, transverse, or radial motions—that is, any other than strictly rotary means.

22. **SYSTEMS, AUTOMATIC, LOCK-OUT, NON-ROTARY.** Automatic lock-out systems establishing connections by longitudinal, transverse, vertical, or radial motion, etc., or other than rotary.

Search Class—

173—TELEPHONY, subclass 21, Systems, Automatic, Lock-out, Combined rotary and non-rotary, for non-rotary features combined with rotary devices.

23. **SYSTEMS, AUTOMATIC, CENTRAL ENERGY.** Systems using a common battery or equivalent at one station, usually the central station, for energizing either the signaling or talking circuits, or both, doing away with the use of either local batteries or magnetos. It does not include those systems using central energy for making of connections only, nor is it limited to systems using central energy (common battery or equivalent) for all purposes.

24. **SYSTEMS, AUTOMATIC, COMBINED ROTARY AND NON-ROTARY.** Automatic systems in which connections are automatically made by devices or connectors having combined rotary and non-rotary motions, as already defined under subclass 19, Systems, Automatic, Lock-out.

Search Class—

173—TELEPHONY, subclass 21, Systems, Automatic, Lock-out, Combined rotary and non-rotary.

25. **SYSTEMS, AUTOMATIC, NON-ROTARY.** Automatic systems establishing connections by devices having essentially non-rotary action or motions in which a line terminal or connector moves in a longitudinal, transverse, vertical, or radial direction other than rotary.

Search Class—

179—TELEPHONY, subclasses 22, Systems, Automatic, Lock-out, Non-rotary, and 24, Systems, Automatic, Combined rotary and non-rotary, for non-rotary features combined with rotary.

26. **SYSTEMS, AUTOMATIC, AUXILIARY AUTOMATIC EXCHANGE.** Systems having a branch exchange through which connections are made automatically by the operator at a distant central office either between the local subscribers connected to such subsidiary branch exchange or between any one of them and a subscriber of the central exchange. Subscribers of the auxiliary branch can connect with central by manipulating this automatic auxiliary.

27. **SYSTEMS, AUTOMATIC, SEMI-AUTOMATIC.** Systems mainly automatic, but necessitating some motion by a central operator, the subscribers being unable to make connection without the central operator's aid.

27.5. **SYSTEMS, AUTOMATIC, SELECTIVE SWITCHES.** Switches employed in automatic telephone systems at a central station and operated under the control of the subscriber for selecting trunk-lines or other subscriber's lines.

28. **SYSTEMS, POLYSTATION-LINES.** Systems having a plurality of substations on the same circuit, forming the so-called "party-line." Polystation or party lines are distinguished from house or intercommunicating systems in that the latter are provided with a plurality of lines or circuits through each substation, while party-lines of the polystation type connect all subscribers on the same circuit.

29. **SYSTEMS, POLYSTATION-LINES, PORTABLE SETS.** Devices including a portable telephone or station set adapted to be connected to a circuit at fixed points or at any point, usually used upon railway-lines or for emergencies, as in fire and police service. The instrument is connected by means of line-tappers or by means of socket and plug or equivalent. Also systems involving railway cars or cabs provided with telephone transmitters and receivers, these instruments being a portable set or station in the sense that the car and the telephone set are movable, having no fixed position.

Search Class—

113—ELECTRICITY, Conductors, subclass 273, Connectors, Line-tappers, for line-tappers.

30. **SYSTEMS, POLYSTATION-LINES, LOCK-OUT.** Party-line systems having means to secure privacy of communication by preventing interference or listening in on the talking-circuit.

Note.—"Calls" provided with lock-out means will be found in this group, except such as are indicated in the search data below.

Search Classes—

179—TELEPHONY, subclass 19, Systems, Automatic, Lock-out, and the subclasses thereunder, and subclasses 38, Systems, House or intercommunicating, Lock-out, 39, Systems, House or intercommunicating, Lock-out, Central energy; 85, Systems, Call, Step-by-step; 86, Systems, Call, Strength and polarity, and 87, Systems, Call, Reed.

177—ELECTRIC SIGNALING, subclasses 333, Annunciator systems, and 343, Annunciator systems, Station selective, and subclasses thereunder, for means for securing selective signaling to the subscribers.

CLASS 179—Continued.

31. **SYSTEMS, POLYSTATION-LINES, LOCK-OUT, CENTRALIZED ENERGY.** This type of party-line systems is limited to those using common battery or equivalent for signaling, for talking, or both, and having means for preventing interference while in use.

Note.—This type avoids the use of a local battery at the substation or the use of a magneto for calling, or both.

32. **SYSTEMS, POLYSTATION-LINES, LOCK-OUT, CENTRALIZED ENERGY, CENTRAL.** Party-lines energized by centralized energy in signaling or in talking connected to a central office or exchange and having means for securing non-interference during communication.

33. **SYSTEMS, POLYSTATION-LINES, LOCK-OUT, CENTRAL.** Party-lines connected to a central office or exchange and provided with lock-out means for preventing listening in or interference with the talking-circuit while in use.

34. **SYSTEMS, POLYSTATION-LINES, CENTRALIZED ENERGY.** Party-lines using common battery or equivalent either for signaling or for talking, or both.

35. **SYSTEMS, POLYSTATION-LINES, CENTRALIZED ENERGY, CENTRAL.** Systems in which party-lines are connected to a central office and in which a common battery or equivalent is used for signaling, talking, or both.

36. **SYSTEMS, POLYSTATION-LINES, CENTRAL.** Party-lines, as defined in subclass 28, Systems, Polystation-lines, connected to a central office.

Search Class—

179—TELEPHONY, subclass 177, Listening and ringing keys, Polystation-lines, for listening and ringing keys for polystation-lines.

37. **SYSTEMS, HOUSE OR INTERCOMMUNICATING.** Intercommunicating systems in which there are at least as many wires through each station as there are stations, each station being equipped with means for connecting at will with any other or in which a plurality of circuits pass through each subscriber's station, there being enough of such circuits idle with average use to establish connections.

Note.—This subclass differs from polystation-lines in the number of wires between stations, the polystation or party-line including substations in series or bridged across a single circuit, now usually metallic, while in house systems there are a plurality of circuits between the stations.

38. **SYSTEMS, HOUSE OR INTERCOMMUNICATING, LOCK-OUT.** Intercommunicating systems provided with means for securing privacy or secrecy in conversation, thus preventing interference or listening in with the talking-circuit during its use, whereby the other substations or the operators are locked out.

39. **SYSTEMS, HOUSE OR INTERCOMMUNICATING, LOCK-OUT, CENTRAL ENERGY.** Intercommunicating and lock-out systems energized by a common battery or equivalent in signaling or talking which supersedes the use of hand-magnetos or local batteries at substations for either or both purposes.

40. **SYSTEMS, HOUSE OR INTERCOMMUNICATING, CENTRALIZED ENERGY.** House systems having a common battery or equivalent for signaling or for talking or for both purposes.

41. **SYSTEMS, DIVIDED CENTRAL.** Systems in which the subscriber's lines are grouped upon separate switchboards either in the same building or in separate offices and connected by trunk or toll lines by operators at the central office or exchanges.

42. **SYSTEMS, DIVIDED CENTRAL, PRIVATE BRANCH EXCHANGE.** Systems in which a private exchange is provided with a trunk line or circuit to a central office or exchange. Usually one or more of the branch subscribers can be connected to the main office directly, while others can only be connected through the aid of the branch operator.

Search Class—

179—TELEPHONY, subclass 26, Systems, Automatic, Auxiliary automatic exchange.

43. **SYSTEMS, DIVIDED CENTRAL, RECIPROCAL SIGNALING-TRUNKS.** Divided-central systems provided with "two-way" trunk-circuits between the different exchanges or boards in which means for reciprocal signaling are provided, so that either exchange or operator can signal the other over the same trunk-circuit and establish connections between subscribers.

Search Class—

179—TELEPHONY, subclass 42, Systems, Divided central, Private branch exchange.

44. **SYSTEMS, DIVIDED CENTRAL, AUTOMATIC RINGING.** Trunk-circuits having means for signaling the called subscriber automatically on insertion of the calling-plug by the incoming trunk-line operator or equivalent motions in ordinary connections.

45. **SYSTEMS, DIVIDED CENTRAL, THROUGH-RINGING.** Systems having means by which the answering or first operator at the central station rings up or signals the called sub-

CLASS 179—Continued.

scriber when the operator at the incoming trunk or called subscriber's board inserts the calling or connecting plug. It also includes those systems in which the latter operator can ring through or back and call up the calling subscriber. Each of these obviates a second operator signaling a subscriber.

Search Class—

179—TELEPHONY, subclass 44, Systems, Divided central, Automatic ringing.

46. SYSTEMS, DIVIDED CENTRAL, THROUGH-RINGING, CENTRALIZED ENERGY. Systems involving through-ringing in which one or both exchanges are of the centralized-energy type.

47. SYSTEMS, DIVIDED CENTRAL, THROUGH-RINGING, MULTIPLE SWITCHBOARD. Systems of the through-ringing type in which subscribers' lines at either exchange terminate on a multiple board—i. e., having spring-jacks or terminals on each section.

48. SYSTEMS, DIVIDED CENTRAL, MULTIPLE SWITCHBOARD. Divided-central systems in which subscribers' lines terminate in multisection-boards at either or both exchanges (one office or board being connected to the other by means of trunk or toll lines), multisection-boards being defined as those in which subscribers' lines have a terminal or spring-jack at each section or division of the switchboard.

49. SYSTEMS, DIVIDED CENTRAL, MULTIPLE SWITCHBOARD, CENTRALIZED ENERGY. Divided-central systems having multiple switchboards for the subscribers' lines at either exchange and either or both of which are of the central-energy type, having a common battery or equivalent for either signaling or talking, or both, from subscriber to operator.

50. SYSTEMS, DIVIDED CENTRAL, CENTRALIZED ENERGY. Systems of the divided-central type in which subscribers' circuits terminating at either central office are energized by a common battery or equivalent in operating the signal at central or in talking, or both, avoiding the use of a magneto or local battery at the subscribers' stations of either exchange.

51. SYSTEMS, CENTRAL. Systems involving a central office and not otherwise classifiable.

52. SYSTEMS, CENTRAL, MULTIPLE ANSWERING-JACK. Systems in which the subscribers' lines are provided with a plurality of answering-jacks, each of which is located upon a different switchboard and in which the subscriber can signal at will to any of said boards at which the called subscribers' lines connect.

53. SYSTEMS, CENTRAL, MULTIPLE SWITCHBOARD. Systems in which the subscribers' lines are provided with a jack or branch terminal upon each section of the switchboard.

54. SYSTEMS, CENTRAL, MULTIPLE SWITCHBOARD, AUXILIARY. Multiple-switchboard systems in which an auxiliary board or section is provided in addition to the usual sections or boards, usually to relieve excessive pressure of calls on any section or board during busy hours.

Search Class—

179—TELEPHONY, subclass 41, Systems, Divided central, for auxiliary switchboards used in divided-central systems.

55. SYSTEMS, CENTRAL, MULTIPLE SWITCHBOARD, CENTRALIZED ENERGY. Central and multiple-switchboard systems avoiding the use of hand-magnetos or local batteries at the substations for calling or talking or for both purposes by substituting a common or storage battery or dynamo at a central point.

Note.—This subclass includes not only centralized energy for all purposes, but the use of centralized energy for calling or for talking. The point at which the common battery or equivalent is located is usually the central office or exchange, though the energy could be supplied from any other point.

56. SYSTEMS, CENTRAL, MULTIPLE SWITCHBOARD, CENTRALIZED ENERGY, LINE-SIGNAL CONTROL. Central multiple-switchboard systems using a common battery or equivalent for calling or talking or for both purposes, and in which the line-signal is restored automatically or controlled by central in responding to calls.

Note.—See definition of subclass 71, Systems, Central, Centralized energy, Line-signal control, in this class.

Search Class—

179—TELEPHONY, subclasses 71, Systems, Central, Centralized energy, Line-signal control, and 74, Systems, Central, Line-signal control.

57. SYSTEMS, CENTRAL, MULTIPLE SWITCHBOARD, CENTRALIZED ENERGY, LINE-SIGNAL CONTROL, SPRING-JACK CUT-OFF. Central-energy multiple-switchboard systems in which the line-signal is controlled by being cut off by the breaking of contacts at the jack on inserting a plug therein.

58. SYSTEMS, CENTRAL, MULTIPLE SWITCHBOARD, CENTRALIZED ENERGY, LINE-SIGNAL CONTROL, RELAY CUT-OFF. Central-energy multiple-switchboard systems in which the line-signal is cut off by the action of a relay at central when the central operator responds to the call, usually by the insertion of the answering-plug in the answering-jack.

CLASS 179—Continued.

59. SYSTEMS, CENTRAL, MULTIPLE SWITCHBOARD, PLUG-TERMINAL. Central multiple-switchboard systems in which the subscribers' lines are provided with a plug-terminal adapted to be inserted in one of the jacks of the called subscriber.

Note.—Central systems provided with plug-terminals are cross-referenced into this subclass.

Note.—All systems technically known as "single-cord" systems are classified herein.

60. SYSTEMS, CENTRAL, MULTIPLE SWITCHBOARD, PLUG-TERMINAL, LINE-SIGNAL CONTROL. Central multiple-switchboard systems of the plug-terminal type in which the line-signal is automatically restored or controlled by the operator at central in his response to calls.

Note.—Line-signal control has the same significance in all telephone systems. See note to subclass 74.

Search Class—

179—TELEPHONY, subclasses 71, Systems, Central, Centralized energy, Line-signal control, and 74, Systems, Central, Line-signal control.

61. SYSTEMS, CENTRAL, MULTIPLE SWITCHBOARD, PLUG - TERMINAL, LINE - SIGNAL CONTROL, SPRING-JACK CUT-OFF. Central and multiple-switchboard systems of this type in which the line-signal is cut off by the insertion of a plug in the spring-jack by the breaking of contacts therein.

62. SYSTEMS, CENTRAL, MULTIPLE SWITCHBOARD, PLUG-TERMINAL, LINE-SIGNAL CONTROL, SPECIAL TEST-PLUG. Plug-terminal multiple-switchboard systems in which a testing-plug is provided in addition to the usual plug-terminal. It does not include those in which the plug-terminal is specially constructed for the purpose of testing.

63. SYSTEMS, CENTRAL, MULTIPLE SWITCHBOARD, SPECIAL TEST-PLUG. In multiple-switchboard systems of this type a separate plug is used to determine whether or not the line is in use or busy.

Note.—In the old classification multiple-switchboard test involved means for determining whether a line was in use or busy and had no relation to means for electrical testing other than this, and the use of "test" in test-plug has the same significance only.

Note.—All electrical testing devices for telephones are classifiable in this class, subclass 175, Testing devices.

Search Class—

175—ELECTRICITY, GENERAL APPLICATIONS, subclass 183, Testing, for electrical testing devices of general application.

64. SYSTEMS, CENTRAL, MULTIPLE SWITCHBOARD, SPECIAL TEST-PLUG, LINE-SIGNAL CONTROL. Central multiple-switchboard systems using a special plug for the busy test and in which the line-signal is restored, shunted, or otherwise controlled automatically or cut off by the central operator's response to calls.

Search Class—

179—TELEPHONY, subclasses 71, Systems, Central, Centralized energy, Line-signal control, and 74, Systems, Central, Line-signal control.

65. SYSTEMS, CENTRAL, MULTIPLE SWITCHBOARD, SPECIAL TEST-PLUG, LINE-SIGNAL CONTROL, SPRING-JACK CUT-OFF. Central multiple-switchboard systems using a special test-plug in which the line-signal is cut off by the breaking of contacts at the spring-jack by the insertion of a plug therein.

66. SYSTEMS, CENTRAL, MULTIPLE SWITCHBOARD, SPECIAL TEST-PLUG, LINE-SIGNAL CONTROL, RELAY CUT-OFF. Central multiple-switchboard systems of the special test-plug type in which the line-signal is cut off by a relay when central responds to a call.

67. SYSTEMS, CENTRAL, MULTIPLE SWITCHBOARD, LINE-SIGNAL CONTROL. Multiple-switchboard systems in which the line-signal is controlled automatically by the act of the operator in responding to calls and includes those provided with drop or signal restorers and line-signals that are shunted or cut off by the insertion of the switch-plug in the jack.

Search Class—

179—TELEPHONY, subclasses 71, Systems, Central, Centralized energy, Line-signal control, and 74, Systems, Central, Line-signal control.

68. SYSTEMS, CENTRAL, MULTIPLE SWITCHBOARD, LINE-SIGNAL CONTROL, SPRING-JACK CUT-OFF. Central multiple-switchboard systems in which the line-signal is cut off by breaking of contact at the spring-jack on the insertion of a plug therein.

69. SYSTEMS, CENTRAL, MULTIPLE SWITCHBOARD, LINE-SIGNAL CONTROL, RELAY CUT-OFF. Central multiple-switchboard systems in which the line-signal is cut off by a relay when a plug is inserted in the jack in responding to calls.

70. SYSTEMS, CENTRAL, CENTRALIZED ENERGY. Central systems using a common battery or equivalent, superseding the hand-magnetos or local battery, for either signaling, talking, or both.

CLASS 179—Continued.

71. SYSTEMS, CENTRAL, CENTRALIZED ENERGY, LINE-SIGNAL CONTROL. Central systems employing common battery or equivalent for signaling or talking, or both, and in which the line-signal is restored or controlled automatically when the central operator responds to calls, as when an answering-plug is inserted in the jack. It includes those in which a line-signal is shunted or rendered inoperative and in which the line-signal may be that of the calling or called subscriber.

Search Class—

179—TELEPHONY, subclasses 56, Systems, Central, Multiple switchboard, Centralized energy, Line-signal control; 60, Systems, Central, Multiple switchboard, Plug-terminal, Line-signal control; 64, Systems, Central, Multiple switchboard, Special test-plug, Line-signal control, and 67, Systems, Central, Multiple switchboard, Line-signal control.

72. SYSTEMS, CENTRAL, CENTRALIZED ENERGY, LINE-SIGNAL CONTROL, SPRING-JACK CUT-OFF. Centralized-energy systems, as defined above, in which the line-signal at central is cut out by the separation of contacts at the spring-jack by the insertion of a plug therein.

73. SYSTEMS, CENTRAL, CENTRALIZED ENERGY, LINE-SIGNAL CONTROL, RELAY CUT-OFF. Systems of this type, as defined above, in which the line-signal at central is cut out by the energizing of a relay when central responds to a call.

74. SYSTEMS, CENTRAL, LINE-SIGNAL CONTROL. Central systems not otherwise classifiable in which the line-signal is restored or controlled automatically when central responds to the call, as by inserting the answering-plug in the jack.

Note.—The line-signal may be that of either subscriber which is restored, shunted, cut off, or otherwise rendered inoperative. Those cutting off the line-signal are classified under subclasses 75, Systems, Central, Line-signal control, Spring-jack cut-off, and 76, Systems, Central, Line-signal control, Relay cut-off.

Search Class—

179—TELEPHONY, subclasses 56, Systems, Central, Multiple switchboard, Centralized energy, Line-signal control; 60, Systems, Central, Multiple switchboard, Plug-terminal, Line-signal control; 64, Systems, Central, Multiple switchboard, Special test-plug, Line-signal control, and 67, Systems, Central, Multiple switchboard, Line-signal control.

75. SYSTEMS, CENTRAL, LINE-SIGNAL CONTROL, SPRING-JACK CUT-OFF. Systems in which the line-signal at central is cut off by breaking contacts at the spring-jack by the insertion of a plug therein in response to calls.

76. SYSTEMS, CENTRAL, LINE-SIGNAL CONTROL, RELAY CUT-OFF. Central systems in which the line-signal is cut out by the action of a relay when central responds to the call.

77. SYSTEMS, CENTRALIZED ENERGY. Systems of telephony in which either the magnetos or local batteries at subscribers' stations are omitted and the energy for either signaling or talking, or both, supplied from a common battery or equivalent located at one point, usually at the central station.

78. SYSTEMS, ANTI-INDUCTIVE. Systems in which circuits, wires, condensers, or impedance-coils, etc., are arranged to prevent the detrimental effects occasioned by induction from internal or external causes. It includes systems of balancing, transposing, leak-branches, and loop-circuits or those involving use of condensers, impedance-coils, or other devices to secure the same results or for producing distortionless circuits.

Note.—This subclass includes the loaded circuits of systems not involving a central.

The instruments *per se* or other devices not constituting a combination of devices or a system are classified in this class, subclass 174, Anti-induction devices.

For substitution or subscribers' circuits see this class, subclass 81, Systems, Substation-circuits.

Search Classes—

179—TELEPHONY, subclasses under Systems, Central; Systems, Polystation-lines; Systems, Automatic.

173—ELECTRICITY, CONDUCTORS, especially subclass 81, Conductors, Anti-inductive.

79. SYSTEMS, ANTI-INDUCTIVE, CONDENSER. Anti-inductive systems in which a condenser is used to prevent the detrimental effects of induction.

Note.—Distortionless circuits involving condensers are also classifiable herein.

80. SYSTEMS, ANTI-INDUCTIVE, IMPEDANCE. Anti-inductive or distortionless systems in which the detrimental effects occasioned by induction are prevented by the introduction of impedance-coils or equivalent.

81. SYSTEMS, SUBSTATION-CIRCUITS. Systems setting forth features of local circuits at the substations, including the arrangement of devices therein.

Note.—If the claims simply relate to the arrangement of instruments upon a backboard or in a box, the device is classified in subclass 100, Sets. If claims for telephones, switches, etc., claim the connecting circuits or wires, the device is classified under Telephones, Switches; but if the claims go further and claim the instruments in those circuits the invention is properly classified in Systems or its subclasses.

Note.—For anti-inductive systems see in this class, subclasses 78, Systems, Anti-inductive, and 174, Anti-induction devices, showing substation or subscribers' circuit arrangements.

CLASS 179—Continued.

82. SYSTEMS, SPACE. Systems wherein the transmission of speech is effected through space, either by induction, by electrical or light waves, varying the resistance of a receiver in an electrical telephone-circuit at the receiving station. The definition is broad enough to include the transmission of speech by induction in railway telephony. All inventions claiming the wireless transmission of speech are classified herein, though methods and apparatus for wave transmission, electrical distribution, and wireless telegraphy may also be claimed.

83. SYSTEMS, SPACE, RADIOPHONES. The transmission of speech through space by means of rays of light, the varying intensity of which produced by the transmitter acts upon a sensitive cell in the receiver-circuit.

84. SYSTEMS, CALL. That type of systems involving means for signaling between subscribers or with central and including the receiver-hook or other telephone apparatus specific to telephony.

Note.—The subclass has been narrowed to exclude systems applicable to general electrical signaling, which have been transferred to class 177, ELECTRIC SIGNALING, subclass 333, Annunciator systems, and appropriate subclasses thereunder.

Note.—For calling devices in which the telephone-magnet is also the magnet of the magneto see in this class, subclass 118, Telephones, Magnetic, Magnets, Combined telephone and call.

85. SYSTEMS, CALL, STEP-BY-STEP. Telephone-call systems in which an electromagnet operated by successive electric impulses moves a ratchet mechanism step by step, signaling the desired station, which signaling may be selective.

Note.—If the system involves means for preventing interference or to "lock out" other subscribers while the line is in use, such systems are classified under subclass 30, Systems, Polystation-lines, Lock-out, and its subclasses, or subclass 38, Systems, House or intercommunicating, Lock-out, or subclass 39, Systems, House or intercommunicating, Lock-out, Central energy.

86. SYSTEMS, CALL, STRENGTH AND POLARITY. Call systems involving the use of different strengths or determined directions of current, or both, for signaling the desired subscriber.

Note.—Call systems including lock-out or non-interfering devices are classified in subclass 30, Systems, Polystation-lines, Lock-out, and the subclasses thereunder, and in subclasses 38, Systems, House or intercommunicating, Lock-out, and 39, Systems, House or intercommunicating, Lock-out, Central energy.

87. SYSTEMS, CALL, REED. Call systems in which pendulums, reeds, or equivalent are used in signaling the desired station.

Note.—See notes to subclasses 85 and 86 above.

88. SYSTEMS, CALL, AUTOMATIC. Telephone-call systems in which no distinct or separate acts are required to signal other than the usual removal of receiver from its hook or pulling down the pivoted support to position for use or equivalent.

89. SYSTEMS, CALL, RETURN. Telephone-call systems in which a calling subscriber is notified of the fact that his call has been sent, appointments made, time of called subscriber's return signaled, etc.

Search Classes—

173—TELEPHONY, subclass 6, Systems, Combined telephone and phonograph.

178—TELEGRAPHY, subclass 50, Telegraphs, Fire.

90. SYSTEMS, CALL, TRANSMITTERS. Devices used in subclass 16, Systems, Automatic, for transmitting the signaling impulses to a selector or switch at the central office. It does not include transmitters used in other systems.

Note.—For devices including transmitters used in other systems see in this class, subclasses 93, Switchboards, Substation, and 160, Switches, Hook, Selective line.

91. SWITCHBOARDS. Apparatus for establishing connections between subscribers specific to the art of telephony and not adapted to more general application.

Note.—Most of the switchboards in telephony are of the spring-jack type, those of the cross-strip or terminal plate or socket type being classifiable in class 175, ELECTRICITY, GENERAL APPLICATIONS, if such boards do not include other elements otherwise limiting the invention to telephony.

Search Class—

175—ELECTRICITY, GENERAL APPLICATIONS, the subclasses under Switchboards.

92. SWITCHBOARDS, DROP-RESTORERS. Switchboards in which the drop is automatically restored to its place when the operator at central responds to the call, as by the insertion of a plug in the calling subscriber's jack. They are either mechanical or magnetic. The operator at central makes no other motions than those required to insert the plug. If the operator is required to point the plug up through the drop or restore it by finger, the device is not found herein.

Search Class—

179—TELEPHONY, subclasses 56, Systems, Central, Multiple switchboard, Centralized energy, Line-signal control; 60, Systems, Central, Multiple switchboard, Plug-terminal, Line-signal control; 64, Systems, Multiple switchboard, Special test-plug, Line-signal control; 67, Systems, Central, Multiple switchboard, Line-signal control; 71, Systems, Central, Centralized energy, Line-signal control, and 74, Systems, Central, Line-signal control.

CLASS 179—Continued.

93. **SWITCHBOARDS, PLUG-SHIFTERS.** Switchboards of this type involving means for automatically moving the plug in the jack or for ejecting it therefrom or in which the plug is moved by hand through more than one position to effect different results.
94. **SWITCHBOARDS, LAMP - ANNUNCIATORS.** Switchboards involving illumination at the subscriber's annunciator upon a call being sent by him.
95. **SWITCHBOARDS, PLUG-SEATS, SWITCHES, AND TAKE-UPS.** Devices involving the structure of the plug-seats or seat-switches and those relating to the means for returning the plug to its seat, as by the use of weights or equivalent.
96. **SWITCHBOARDS, SPRING - JACK.** Telephone-switchboards at which the subscribers' lines are connected to terminals forming a socket having spring-contacts operated by the insertion of a plug therein. This subclass also includes patents on the spring-jack itself.
Note.—Telephone spring-jack switchboards are usually provided with the testing-ring.
97. **SWITCHBOARDS, SPRING-JACK, STRIPS.** Devices in which spring-jacks are united together into bands, banks, or strips forming a separable element.
98. **SWITCHBOARDS, WIRE DISTRIBUTION.** Cable-racks, distributing and transfer boards, frames, etc., to facilitate the accessibility and arrangement of the wires at the central office and those involving the wiring or webbing of the wires in the cables or without at the connection of cable and board.
99. **SWITCHBOARDS, SUBSTATION.** Substation devices used by a subscriber for making connections with a desired subscriber on polystation-lines and in house or automatic systems.
Search Classes—
 179—TELEPHONY, subclass 5, Systems, Composite, Fire or police.
 178—TELEGRAPHY, subclass 161, Telegraphs, Fire, Variable signal, Dial, for other types of substation switchboards.
100. **SETS.** Combinations of instruments at a station mounted upon the backboard or in a telephone box or cabinet, usually termed "wall sets." This subclass relates particularly to the construction of the box or cabinet and arrangement of devices therein or thereupon.
Note.—Combinations of devices in local circuits are classified in this class, subclass 81, Systems, Substation-circuits.
101. **TELEPHONES, INSTRUMENTS TRANSFORMING THE SOUND-VIBRATIONS OF SPEECH INTO VARIABLE ELECTRIC CURRENT OR POTENTIAL AND VICE VERSA.** It is mostly composed of the various types of *receivers*.
Note.—For other than electrical features see class 181, Acoustics, subclass 29, Mechanical telephones.
102. **TELEPHONES, COMBINED RECEIVER AND TRANSMITTER.** Devices in which the microphone or transmitter and a receiver are mounted upon the same handle or otherwise combined into a single instrument, as by socketing or clamping together. This subclass is miscellaneous, including the two separable devices compactly united together when not in use. The instruments act independently and are usually detached or separated from each other when in use.
Note.—For one instrument uniting the features of receivers and transmitters see this class, subclass 104, Telephones, Micro-magnetic.
103. **TELEPHONES, COMBINED RECEIVER AND TRANSMITTER, HAND.** Combination devices or hand-phones uniting on one handle a microphone and a receiver so placed as to be opposite mouth and ear, respectively, when held in position for use, the handle being between the receiver and transmitter.
104. **TELEPHONES, MICROMAGNETIC.** Includes those telephones in which the vibration of the diaphragm effects a variation of resistance in a microphone contact and also varies the magnetic induction, as in the usual receiver or magneto-telephone, so that the current is due to their combined action.
105. **TELEPHONES, COMPOUND.** Telephones in which one or a plurality of diaphragms energizes one or more circuits or in which several circuits are united to a transmitter or receiver, the sound-waves being transmitted or received through one mouthpiece, which may branch into several passages in which are placed the diaphragms. This subclass also includes those devices in which several sets of microphones are energized by the same or different diaphragms and in which each set is capable of use on different circuits.
106. **TELEPHONES, CONDENSER.** Telephones in which a condenser is inseparably involved in the structure of the telephone itself, but not as a mere instrument added to complete a telephone set.
Search Class—
 178—TELEGRAPHY subclass 12, Condensers, for condensers *per se*.
107. **TELEPHONES, AUDIPHONES.** Devices especially adapted to aid defective hearing involving a telephone, usually by means of a stethoscopic device actuating the microphone or equivalent.
108. **TELEPHONES, INTENSIFIERS.** Telephones in which greater amplitude of vibration is *mechanically* produced by amplifying means. In nearly all of these devices such effects are secured by means of a lever having arms of unequal length.

CLASS 179—Continued.

109. **TELEPHONES, INTENSIFIERS, HARMONIC VIBRATORS.** Devices in which wires, reeds, springs, or a plurality of air columns or other resonators reinforces or intensifies the vibrations of the fundamental and its overtones.
110. **TELEPHONES, MOLECULAR.** Telephones in which vibrations are produced or transmitted through the intermediate elongations, contractions, or torsional effects in magnetic material set up by intermolecular action therein, produced either by a varying current passing through such material or through the vibrations of the diaphragm communicated thereto. It does not include those telephones in which the diaphragm or electrode vibrates through molecular vibrations as distinct from mechanical vibrations.
111. **TELEPHONES, ELECTROSTATIC.** Telephones in which the variable current or attractions and repulsions of the diaphragm are produced through electrostatic action and not by *electromagnetic* induction.
Search Class—
 179—TELEPHONY, subclass 106, Telephones, Condenser.
112. **TELEPHONES, INDUCTION-COIL.** Telephones including an induction-coil structurally a part of such device and inseparable therefrom as a separate instrument.
113. **TELEPHONES, NON-DIAPHRAGM.** Telephones operative without a diaphragm—*i. e.*, those not having a vibratory disk or plate.
Note.—This subclass does not include those transmitters provided with a diaphragm-electrode, such devices being classified in subclasses 115, Telephones, Magnetic, Diaphragm; 116, Telephones, Magnetic, Diaphragm, Multiple; 124, Transmitters, Granular, Electrode; 132, Transmitters, Multiple electrode, Multiple diaphragm; 138, Transmitters, Diaphragm; and 140, Transmitters, Electrode.
114. **TELEPHONES, MAGNETIC.** Receivers in general use operating through electromagnetic induction between a diaphragm and magnet. These telephones may also be used as transmitters, though not as effectively.
115. **TELEPHONES, MAGNETIC, DIAPHRAGM.** Magnetic telephones which relate to the construction, material, and supports of the diaphragm—*i. e.*, diaphragms formed of spiral and flat coils, strained, magnetic, attuned, and tubular diaphragms, such features being claimed in combination with sufficient elements to constitute a magnetic telephone.
Search Class—
 179—TELEPHONY, subclass 181, Details, Diaphragms, for diaphragms *per se*.
116. **TELEPHONES, MAGNETIC, DIAPHRAGM, MULTIPLE.** Magnetic telephones in which a plurality of diaphragms is used.
Search Class—
 179—TELEPHONY, subclasses 123, Transmitters, Granular, Multiple diaphragm; 132, Transmitters, Multiple electrode, Multiple diaphragm; and 139, Transmitters, Diaphragm, Multiple, for multiple-diaphragm features.
117. **TELEPHONES, MAGNETIC, MAGNETS.** Inventions in magnetic telephones relating to the structure of the magnets.
Search Class—
 179—TELEPHONY, subclass 116, Telephones, Magnetic, Diaphragm, Multiple.
118. **TELEPHONES, MAGNETIC, MAGNETS, COMBINED TELEPHONE AND CALL.** Inventions relating to the structure of magnets used both for the telephone and the calling device, eliminating the necessity for separate magnets for each.
119. **TELEPHONES, MAGNETIC, MAGNETS, POLE-PIECES.** Inventions in magnetic telephones relating to structure of the magnets and the pole-pieces thereof.
Search Class—
 179—TELEPHONY, subclass 116, Telephones, Magnetic, Diaphragm, Multiple.
120. **TELEPHONES, MAGNETIC, TUBULAR.** Magnetic telephones in which tubular magnets are used other than solenoids or electromagnets.
121. **TRANSMITTERS.** Devices used to transform the vibrations of the diaphragm produced by sound-waves into electric currents with the exception of the original type now used as a receiver.
Note.—Electric telephones are classified here or under subclasses 138, Transmitters, Diaphragms, or subclass 140, Transmitters, Electrode, and subclasses thereunder.
122. **TRANSMITTERS, GRANULAR.** Microphones in which minute granules are used between the electrodes, usually in the form of powdered carbon, lampblack, or equivalent, forming a multiple-series contact.
Search Class—
 179. TELEPHONY, subclass 190, Details, Resistance elements, for resistance elements *per se*.
123. **TRANSMITTERS, GRANULAR, MULTIPLE DIAPHRAGM.** Granular transmitters in which a plurality of diaphragms is used.
Search Class—
 179. TELEPHONY, subclasses 116, Telephones, Magnetic, Diaphragm, Multiple; 132, Transmitters, Multiple electrode, Multiple diaphragm, and 139, Transmitters, Diaphragm, Multiple, for multiple-diaphragm features.

CLASS 173—Continued.

124. TRANSMITTERS, GRANULAR, ELECTRODE. Granular transmitters involving characteristics or structure of the electrodes of the microphone and their relations to carbon granules, as material, shape, or surface.

Search Class—

179—TELEPHONY, subclass 190, Details, Resistance elements, for particular material used as electrodes.

219—ELECTRIC HEATING AND RHEOSTATS, subclasses 63, Resistance elements; 72, Resistance elements, Granular, and 76, Resistance elements, Composition.

125. TRANSMITTERS, GRANULAR, ELECTRODE, EMBEDDED. Granular transmitters in which an electrode is embedded or nearly inclosed in the granules.

126. TRANSMITTERS, GRANULAR, ELECTRODE, PLUNGER. Granular transmitters in which an electrode takes the form of a plunger penetrating the granules, but not to the extent of embedding it therein.

127. TRANSMITTERS, GRANULAR, ELECTRODE, POCKETS. Granular transmitters in which the grains are held in pockets, sockets, or between partitions formed in or about the electrodes, but does not include those containing but one pocket.

128. TRANSMITTERS, GRANULAR, ELECTRODE, PROJECTIONS. Granular transmitters in which one or more electrodes are provided with projecting points, surfaces, or corrugations to form greater contact-surface with the granules.

129. TRANSMITTERS, GRANULAR, ELECTRODE, ROTARY. Granular transmitters in which the cell or electrode is revoluble for the purpose of shaking up the granules and restoring equilibrium in contact-surface, primarily to prevent the packing of the granules.

130. TRANSMITTERS, GRANULAR, GRANULES MAGNETIC. Granular transmitters having magnetic granules—i. e., formed of magnetic material, as steel, iron, nickel, cobalt, etc., or coated therewith.

131. TRANSMITTERS, MULTIPLE ELECTRODE. Transmitters in which more than two electrodes are used in the microphone contact. This miscellaneous subclass includes all electrodes arranged in series.

Search Class—

179, TELEPHONY, subclass 122, Transmitters, Granular, for microphones having powdered or pulverized granules.

132. TRANSMITTERS, MULTIPLE ELECTRODE, MULTIPLE DIAPHRAGM. Multiple - electrode transmitters having a plurality of diaphragms.

Search Class—

179, TELEPHONY, subclasses 116, Telephones, Magnetic, Diaphragm, Multiple; 123, Transmitters, Granular, Multiple diaphragm, and 139, Transmitters, Diaphragm, Multiple, for multiple-diaphragm features.

133. TRANSMITTERS, MULTIPLE ELECTRODE, FLUID. Multiple-electrode transmitters in which one of the resistance elements, electrodes, or contact-surfaces is fluid, in most cases a liquid.

134. TRANSMITTERS, MULTIPLE ELECTRODE, FLUID, JET. Transmitters in which a jet of fluid or a flame is used.

135. TRANSMITTERS, MULTIPLE ELECTRODE, DIFFERENTIAL. Transmitters having a plurality of microphones, one on each side of the center of the diaphragm or upon the same side, the vibrations of which produce differential, alternating, or intermittent currents. In most of the devices of this type a compound primary coil of an induction-coil is used or the combined currents unite to form the primary, being externally in multiple.

136. TRANSMITTERS, MULTIPLE ELECTRODE, MULTIPLE SERIES CONTACT. Transmitters in which the electrodes are arranged in both series and parallel or multiple grouping or in which a divided current flows in parallel or multiple branches through resistance elements in series.

137. TRANSMITTERS, MULTIPLE ELECTRODE, MULTIPLE CONTACT. Transmitters in which the electrodes are arranged in parallel or multiple grouping.

138. TRANSMITTERS, DIAPHRAGM. Telephone-transmitters involving construction, structure, and material, etc., of the diaphragm or its support, as diaphragm-electrode, multiple, spiral coil, etc., such features being claimed in combination with sufficient other elements to constitute a transmitter. Excludes patents of the granular or multiple-contact type and receivers.

Search Class—

179—TELEPHONY, subclass 145, Transmitters, Electrode, Contact, Spring, for spring-mounted electrode-diaphragms.

139. TRANSMITTERS, DIAPHRAGM, MULTIPLE. Transmitters other than of the multiple-electrode or granular type provided with a plurality of diaphragms.

Search Class—

179, TELEPHONY, subclasses 116, Telephones, Magnetic, Diaphragm, Multiple; 123, Transmitters, Granular, Multiple diaphragm, and 132 Transmitters, Multiple electrode, Multiple diaphragm, for multiple-diaphragm features.

CLASS 179—Continued.

140. TRANSMITTERS, ELECTRODE. Electric transmitters involving structure, material, and supports of the electrodes.

141. TRANSMITTERS, ELECTRODE, CONTACT. Transmitters involving the means that maintain the electrodes in contact or support them.

142. TRANSMITTERS, ELECTRODE, CONTACT, GRAVITY. Transmitters in which the contact of the electrodes is maintained by gravity.

143. TRANSMITTERS, ELECTRODE, CONTACT, GRAVITY, HINGED OR PIVOTED. Gravity-contact transmitters in which an electrode is hinged or pivoted.

144. TRANSMITTERS, ELECTRODE, CONTACT, MAGNETIC. Transmitters in which one or both of the electrodes are supported or maintained in electrical contact through magnetic action.

Search Class—

179—TELEPHONY, subclass 130, Transmitters, Granular, Granules magnetic.

145. TRANSMITTERS, ELECTRODE, CONTACT, SPRING. Transmitters in which the electrodes are supported in contact by means of some form of spring or equivalent. In this group have also been placed all spider-supported electrodes.

146. SUPPORTS. Devices for supporting the transmitter or receiver at rest or in position for use and specific to the telephone art.

Note.—Supports adapted to more general use and not inseparably interwoven with telephone instruments are classified in class 248, SUPPORTS, appropriate subclasses, and class 211, STORE FURNITURE, subclass 15, Display-racks, Adjustable-arm.

Note.—For arm-rests see class 120, STATIONERY, subclass 53, Hand and arm rests.

147. SUPPORTS, STANDS. Devices designed to be placed upon a desk or table and includes means for supporting the transmitter, receiver, or both, usually involving the receiver-switch or other switches.

148. SUPPORTS, VERTICAL ADJUSTMENT. Supports that provide for vertical adjustment of the telephone instruments or sets.

149. SUPPORTS, PIVOTED-ARM. Telephone-supports having a pivoted arm and not specifically classifiable below.

Search Class—

248—SUPPORTS, appropriate subclasses.

150. SUPPORTS, PIVOTED-ARM, EXTENSION. Pivoted supporting arms provided with means for varying the length of such arms.

Search Class—

248—SUPPORTS, appropriate subclasses.

151. SUPPORTS, PIVOTED-ARM, SLIDABLE HOLDERS. Pivoted receiver-supporting arms in which the receiver-holder is slidable upon said arm.

152. SUPPORTS, PIVOTED-ARM, TRANSMITTER. Pivoted arms or supports for the transmitter.

153. SUPPORTS, HOLDER, TRANSMITTER-SUPPORTED. Receiver-holders mounted upon the transmitter or its arm.

154. SUPPORTS, SUSPENSION. Devices for hanging a telephone instrument by means of a cord or equivalent.

Search Class—

240—ILLUMINATION subclass 88, Light supports, Cord-supported.

155. SUPPORTS, SUSPENSION, REELS. Means for suspending a telephone in which a reel is used for winding the supporting cord or wire, usually automatic in its action.

Search Classes—

240—ILLUMINATION, subclass 71, Light supports, Vertically adjustable, Spring-drum.

242—WINDING AND REELING, subclasses 98, Reels, Carriers, Spring-drum article-holders, and 107, REELS, Spring-drum type, and the subclasses thereunder.

248—SUPPORTS, subclass 9, Adjustable, Vertical, Spring.

156. SUPPORTS, HEAD-GEAR. Devices applied to the head of a person for holding one or more of the telephone instruments in position for use.

157. SUPPORTS, BODY. Devices applied to the body, supporting one or more of the telephone instruments in position for use.

158. SWITCHES. This subclass of telephone-switches is limited to devices that close or open one of the telephone-circuits and the structure of which is inseparably involved in that of an instrument specific to telephony, as the receiver or transmitter switch, or relating to the receiver construction.

Note.—For switches operated by supporting devices see in this class, subclass 146, Supports, and the subclasses thereunder.

Note.—For devices adapted to connect one instrument or circuit with one of several others at will see in this class, subclass 99, Switchboards, Substation; with one or two others, subclass 161, Switches, Hook, Obstruction.

159. SWITCHES, HOOK. Telephone-switches in which the receiver support or arm forms an integral part and which are operated by removing or replacing the receiver upon the means to hold it thereon, usually some form of hook.

CLASS 179—Continued.

160. SWITCHES, HOOK, SELECTIVE LINE. Telephone-hook switches pivoted to swing to right or left and connect the telephone to "line in" or "line out" to stations on either side or to private or calling lines and analogous devices where the same function is performed by the aid of additional switches.

Search Class—

179—TELEPHONY, subclass 99, Switchboards, Substation.

161. SWITCHES, HOOK, OBSTRUCTION. Telephone-hook switches in which an obstacle or guard is placed in the path of removal or replacement of the receiver-transmitter, which is forcibly overcome by removal or restoration of the instrument or in which the obstacle must be moved to remove or restore the instrument.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclass 44, Lock-releasing, Gravity, Reciprocating released part, Telephones, for such devices as are coin-controlled.

162. SWITCHES, HOOK, OBSTRUCTION, MOVABLE JAW. Hook-switches in which one of the jaws supporting the receiver is movable and is actuated in removing or replacing the receiver.

163. SWITCHES, HOOK, HORIZONTAL SLIDE. Hook-switches in which the removal or replacement of the receiver upon its support moves the supporting arm or connected slide horizontally operating the switch.

164. SWITCHES, HOOK, GRAVITY-LEVER. Hook-switches in which a lever-arm supports the receiver, the lever-arm being held down by the weight of the receiver when in place and retracted by a spring or equivalent means when it is removed.

Search Class—

179—TELEPHONY, subclasses 88, Systems, Call, Automatic; 99, Switchboards, Substation; 148, Supports, Vertical adjustment; 150, Supports, Pivoted-arm, Extension, and 160, Switches, Hook, Selective line.

165. SWITCHES, HOOK, VERTICAL SLIDE. Gravity switches in which a vertical slide is held down by the receiver, but retracted when the receiver is removed.

Search Class—

179—TELEPHONY, subclass 99, Switchboards, Substation.

166. SWITCHES, HOOK, CONNECTORS. Telephone-switches in which the parts forming the ring or end of the receiver complete a circuit with the support or parts thereof when in place and break the circuit when removed.

167. SWITCHES, RECEIVER. Switches forming a part of, mounted upon, or included in the receiver or hand-phone.

Search Class—

179—TELEPHONY, subclasses 102, Telephones, Combined receiver and transmitter, and 103, Telephones, Combined receiver and transmitter, Hand.

168. SWITCHES, MOBILE. Telephone-switches in which the circuit is closed by a freely movable particle or particles, usually liquid, or those having freely moving solids, as balls, closing or opening circuit when held in different positions.

169. SWITCHES, ROTARY CONTACT. Telephone-switches having revoluble contacts or in which contact is made by rotary motions.

170. REPEATERS. Instruments specific to telephone-circuits adapted to repeat in a second circuit the current flowing in another and in either direction. Combinations of relays forming repeaters are classified in this class.

171. RELAYS. Instruments specific to telephone-circuits for repeating in a second circuit the current flowing in another, but acting in one direction only.

Note.—Most of the devices classifiable in 170, Repeaters, and 171, Relays, include microphone contacts; but they also include induction-coil instruments, "howlers," and other current-varying devices structurally adapted to telephone service.

172. INDUCTION-COILS. Induction-coils inseparably involved in the structure of telephone instruments, but exclusive of such devices as include induction-coils involved in the structure of receivers or transmitters, which are classified in subclass 1-2, Telephones, Induction-coil.

Search Classes—

179—TELEPHONY, subclasses 135, Transmitters, Multiple electrode, Differential, and 136, Transmitters, Multiple electrode, Multiple series contact.

171—ELECTRICITY, GENERATION, subclasses of Inductoriums, especially subclass 124, Inductoriums, Transformers, Stationary, for coils *per se*.

173. INDUCTION-COILS, MULTIPLE. Induction-coils specific to telephone purposes as defined and having a number of primary or secondary coils in series or multiple circuit with its parts or with one another. Either the primary or secondary may be a single coil, the other coil being a multiple coil.

Search Class—

179—TELEPHONY, subclass 135, Transmitters, Multiple electrode, Differential.

174. ANTI-INDUCTION DEVICES. Devices and arrangements for preventing the detrimental effects occasioned by induction from external or internal causes.

For devices of this class in subscribers' circuits see in this class, subclass 81, Systems, Substation-circuits, also subclass 78, Systems, Anti-inductive, and the subclasses thereunder.

CLASS 179—Continued.

175. TESTING DEVICES. Devices and instruments designed and arranged for testing telephone circuits and instruments electrically or mechanically.

Search Class—

175—ELECTRICITY. GENERAL APPLICATIONS, subclass 183, Testing.

176. LISTENING AND RINGING KEYS. Instruments *per se* and necessary connections by which the central operator listens in or calls the subscribers.

Search Classes—

179—TELEPHONY, subclasses 44, Systems, Divided central, Automatic ringing; 61, Systems, Central, Multiple switchboard, Plug-terminal, Line-signal control, Spring-jack cut-off; 93, Switchboards, Plug-shifters, and 95, Switchboards, Plug-seats, switches, and take-ups.

177—ELECTRIC SIGNALING, subclass 10, Circuit-closers, for specific features of the nature indicated.

177. LISTENING AND RINGING KEYS, POLYSTATION-LINES. Such keys as are used on polystation-lines for selective calling.

Note.—For conventional showing of these devices see subclasses under Polystation-lines

178. DETAILS. Specific parts of instruments or devices used in telephony or attachments structurally connected thereto and not otherwise classifiable.

Note.—See subclasses below.

179. DETAILS, CASING. Special structures of the casings of receivers and transmitters or the telephone-box.

180. DETAILS, DAMPERS. Devices that damp or check the vibrations of the diaphragm or microphone or parts thereof.

Search Class—

179—TELEPHONY, subclasses 133, Transmitters, Multiple electrode, Fluid; 144, Transmitters, Electrode, Contact, Magnetic, and 145, Transmitters, Electrode, Contact, Spring, for damping devices.

181. DETAILS, DIAPHRAGMS. Structure, form, material, or properties of diaphragms as a separate article of manufacture.

Search Classes—

179—TELEPHONY, subclasses 115, Telephones, Magnetic, Diaphragm, and 138, Transmitters, Diaphragm; subclass 145, Transmitters, Electrode, Contact, Spring, for spring mounted or supported diaphragms.

181—ACOUSTICS, subclasses 10, Sound-boxes, Graphophone, and 23, Mechanical telephones.

182. DETAILS, EARPIECES. Pads, cushions, caps, plugs, etc., used to prevent extraneous sound-waves from reaching the ears, also ear-trumpets or receivers to fit upon, over, or in the ears.

Search Classes—

179—TELEPHONY, subclasses 156, Supports, Head-gear, and 187, Details, Mouthpieces.

181—ACOUSTICS, subclasses 20, Speaking-tubes, Combined mouth and ear pieces; 23, Auricles; 24, Stethoscopes, and 25, Ear-trumpets.

183. DETAILS, HOODS. Devices for inclosing the upper part of the body and head of the user, operating as screens for extraneous sound, securing greater privacy in communication. Note.—Such devices as only inclose the mouth are classified in subclass 188, Details, Mouthpieces, Voice-screens.

Note.—Telephone booths are in class 20, WOODEN BUILDINGS, subclass 3.5, Buildings, Portable houses, Telephone-booths.

184. DETAILS, PROTECTORS. Means for preventing injury to the parts of receivers or transmitters and their connections and hygienic or antiseptic devices.

Note.—For one diaphragm serving as a protector to others see in this class, subclasses 116, Telephones, Magnetic, Diaphragm, Multiple; 123, Transmitters, Granular, Multiple diaphragm; 132, Transmitters, Multiple electrode, Multiple diaphragm, and 139, Transmitters, Diaphragm, Multiple.

For protectors having locking features or of nature of locks see this class, subclass 187, Details, Locks.

All protectors from electrical currents, as lightning-arresters, fuses, and cut-outs, are classified under class 175, ELECTRICITY, GENERAL APPLICATIONS, subclass 30, Lightning-arresters, and the subclasses of Cut-outs, etc.

185. DETAILS, PROTECTORS, ANTISEPTIC. Devices designed to protect the telephone instruments against the reception or imparting of disease germs, including germicide or sterilizing devices and such hygienic or sanitary devices as secure cleanliness, the majority of patents herein being for antiseptic mouthpieces.

186. DETAILS, PROTECTORS, CONNECTIONS. Devices for preventing injury to the electrical connections or binding-posts of telephone instruments.

Search Class—

173—ELECTRICITY. CONDUCTORS, subclass 269, Connectors, Cord-terminals, and the subclass thereunder.

187. DETAILS, MOUTHPIECES. Devices involving the structure of the mouthpiece, in many cases separate and removable from the usual one and auxiliary thereto, the end secured by such devices being in general the reflection, concentration, or resonance of the sound-vibrations.

Search Classes—

179—TELEPHONY, subclass 182, Details, Earpieces; subclass 185, Details, Protectors, Antiseptic, for antiseptic mouthpieces.

CLASS 179—Continued.

181—ACOUSTICS, subclasses 20, Speaking-tubes, Combined mouth and ear pieces; 21, Speaking-tubes, Mouthpieces; 23, Auricles; 25, Ear-trumpets, and 27, Megaphones.

188. DETAILS, MOUTHPIECES, VOICE-SCREENS. The structure of mouthpieces adapted to shield or conceal the voice of the user and prevent outsiders overhearing conversation thus securing privacy. Most of these devices fit over the lips, enmasking a portion of the face.

Search Classes—

179—TELEPHONY, subclass 183, Details, Hoods, for devices covering more than a portion of the face.

20—WOODEN BUILDINGS, subclass 3.5, Buildings, Portable houses, Telephone-booths.

189. DETAILS, LOCKS. Devices for locking the receiver or its parts or the magneto, preventing unauthorized use or changing the relative positions of parts.

CLASS 179—Continued.**Search Class—**

194—CHECK-CONTROLLED APPARATUS for coin-controlled locks, especially subclasses 8, Check in circuit, Telephones; 16, Check-operated switch, Telephones; 44, Lock-releasing, Gravity, Reciprocating released part, Telephones, and 45, Lock-releasing, Gravity, Reset turning released part.

190. DETAILS, RESISTANCE ELEMENTS. Resistances specific to telephone use, those of the microphone, its electrodes, and granules.

Search Classes—

179—TELEPHONY, subclasses 124, Transmitters, Granular, Electrode; 131, Transmitters, Multiple electrode, and 140, Transmitters, Electrode; subclass 133, Transmitters, Multiple electrode, Fluid, where such elements are in combination with the instruments for fluid resistances.

219—ELECTRIC HEATING AND RHEOSTATS, subclass 63, Resistance elements, and especially 76, Resistance elements, Composition.

CLASS 181.—ACOUSTICS.

DEFINITIONS.

Class.

This class includes devices for recording and reproducing sound; also, devices for mechanically transmitting, for amplifying, and for ascertaining the direction of sound.

Note.—Sound-producing instruments may be found in classes 46, GAMES AND TOYS, subclasses 46, Toys, Sounding, and 47, Toys, Sounding, Wheeled; 84, MUSIC; and 116, SIGNALS. Sound-deadening devices are classified in accordance with their application.

Subclasses.

0.5. Miscellaneous. Inventions falling within the definition of this class, and not otherwise provided for.

1. TELEGRAPHOPHONES. Graphophones wherein the sound is transmitted to or from the diaphragm through some part between the same and the stylus, as a wire, a tube filled with water, etc.

Note.—Inventions wherein a record is made upon a suitable substance or surface and afterwards reproduced, the sound being transmitted solely through such devices, are classified in class 181, ACOUSTICS, even though a telephone line and receiver are employed; patents including a telephone-circuit where the sound is directly transmitted from one person to another and simultaneously a record is made upon a graphophone in a branch circuit, and also patents for a telephone system wherein is located a graphophone for the purpose of announcing some fact, such as the line being busy, are classified in class 179, TELEPHONY.

2. GRAPHOPHONES. Sound recording and reproducing machines where the record is a groove varying in depth, except as subclassified in subclasses 4, 5, 6, 7, and 8.

3. GRAMOPHONES. Sound recording or reproducing machines in which the record is an undulatory groove of even depth.

4. GRAPHOPHONES, MULTIPLE-RECORD. Sound recording and reproducing machines wherein are placed a plurality of tablets any one of which may be brought into operative relation to the recorder or reproducer.

5. GRAPHOPHONES, DISK. Graphophones having a record upon a disk instead of a cylinder.

6. GRAPHOPHONES, RECIPROCATING-RECORD. Graphophones in which the tablet reciprocates, while the stylus has no lateral movement.

7. GRAPHOPHONES, SWINGING REPRODUCER-ARM. Graphophones whose reproducer-arm is pivoted at its rear end and swings laterally around such pivot over a cylindrical record.

Search Class—

181—ACOUSTICS, subclasses 3, Gramophones, and 5, Graphophones, Disk.

8. GRAPHOPHONES, TAPE. Sound recording and reproducing machines in which the record is upon a tape or ribbon.

9. GRAPHOPHONES, FEED MECHANISM. Mechanism for moving back and forth the sound-box or the record of a sound recording and reproducing machine; also, mechanism or connections for starting and stopping the machine.

Note.—Coin-controlled mechanisms for starting and stopping such machines are classified in class 194, COIN-CONTROLLED APPARATUS.

Search Class—

181—ACOUSTICS, subclasses 2, Graphophones; 3, Gramophones; 5, Graphophones, Disk; 6, Graphophones, Reciprocating-record; and 8, Graphophones, Tape.

10. SOUND-BOXES, GRAPHOPHONE. The sound-box of a graphophone, including the sound-box *per se*, the diaphragm, the stylus, and any connections between such parts.

Note.—For the construction of diaphragms search should also be made in subclass 28, Mechanical telephones, in this class; also, in class 179, TELEPHONY.

Search Class—

181—ACOUSTICS, subclasses 2, Graphophones; 5, Graphophones, Disk; 6, Graphophones, Reciprocating-record.

11. SOUND-BOXES, GRAMOPHONE. The sound-box of a gramophone and its parts, as the diaphragm, stylus, etc.

Note.—The peculiar difference between the sound-box of a gramophone and that of a graphophone is the construction whereby

CLASS 181—Continued.

the stylus of a gramophone is permitted to vibrate laterally instead of vertically. In other respects the sound-boxes may be similar.

Search Class—

181—ACOUSTICS, subclass 3, Gramophones.

12. GRAPHOPHONES, DETERMINING DEVICES. Devices for determining the exact position of the recording and reproducing points on the phonogram-cylinder.

13. GRAPHOPHONES, MANDRELS. Mandrels or supports upon which the tablet is supported while in the machine.

14. GRAPHOPHONES, TABLETS, METHODS AND MACHINES FOR MAKING. The title sufficiently defines this subclass.

15. GRAPHOPHONES, TABLETS, TURNING AND SMOOTHING. Mechanism for turning off the surface of a graphophone-tablet, either in its manufacture or in removing a record; also, mechanism for smoothing and polishing the surface of a tablet.

16. GRAPHOPHONES, TABLETS, DUPLICATING DEVICES. Machines or methods whereby a record or a number of records, whether of a graphophone or gramophone, are produced from an original or master record.

17. GRAPHOPHONES, TABLETS. The structure and material of graphophone tablets.

Search Class—

106—PLASTIC COMPOSITIONS, subclass 1.5, Sound record, for moldable compositions specially adapted for use in sound-record tablets.

18. SPEAKING-TUBES, SYSTEMS. Construction of speaking-tubes with their associated parts; also, "speaking-tube exchanges;" also, any patents on speaking-tubes not classified elsewhere.

19. SPEAKING-TUBES, ALARMS AND INDICATORS. Alarms or indicators of a speaking-tube.

Search Class—

181—ACOUSTICS, subclasses 18, Speaking-tubes, Systems, and 21, Speaking-tubes, Mouthpieces.

20. SPEAKING-TUBES, COMBINED MOUTH AND EAR PIECES. Mouthpieces and connected earpieces.

21. SPEAKING-TUBES, MOUTHPIECES. Structure of the mouthpieces of speaking-tubes and the combination therewith of accessory parts, as alarms, indicators, etc.

Search Class—

181—ACOUSTICS, subclass 18, Speaking-tubes, Systems.

22. SPEAKING-TUBES, TUBES. The construction of the tubes *per se*.

Search Class—

181—ACOUSTICS, subclasses 18, Speaking-tubes, Systems, and 20, Speaking-tubes, Combined mouth and ear pieces.

23. AURICLES. Devices worn in the ear to assist defective hearing.

24. STETHOSCOPES. Devices for augmenting and conducting to the ear sounds generated within the human body.

25. EAR-TRUMPETS. Trumpets, tubes, etc., for aiding defective hearing, one end adapted to be placed in the ear, the device as a whole being held in place by the hand.

26. SOUND-LOCATING DEVICES. Devices for ascertaining the direction from which a sound proceeds.

27. MEGAPHONES. Speaking-trumpets and the trumpets or horns employed in talking-machines.

Search Class—

181—ACOUSTICS, subclass 25, Ear-trumpets.

28. DENTIPHONES. Devices to be held between the teeth for aiding defective hearing.

29. MECHANICAL TELEPHONES. Telephones wherein the sound is transmitted by the vibrations of the molecules in a wire instead of by electrical means.

30. AUDITORIUM. Devices for improving the acoustic properties of halls or other places.

CLASS 184.—LUBRICATION.

DEFINITIONS.

Class.

This class is not intended to include the lubrication generally of machines of every kind; but it is intended to include those devices employed to lubricate bearing parts in a machine where such lubricating device forms no part of the machine structure.

Where the lubricating device is a part of the machine, where the structure is modified to admit of lubrication, where the particular or peculiar operation of the machine governs the operation of the lubricating device, or, in other words, where there is a special combination between the lubricating device and the machine in connection with which the lubricating device is used, then such device is classified with the machine to which it belongs.

In this definition the term "machine" includes any device having bearing parts.

Exception: Where the machine is operated by air, steam, or water and the same means used to operate the lubricator, then such lubricator belongs to this class, provided the structure of the machine is not modified. An example of this exception is subclass 52, Lubricators, Force-feed, Fluid-operated, Condensation displacement, Choke-plugs.

Note.—For further search upon this line, see classes 64, JOURNAL-BOXES, PULLEYS, AND SHAFTING, subclasses 24, Journal-boxes, Lubricating; 28, Journal-boxes, Lubricating, Coolers; 31, Journal-boxes, Lubricating, Band-applying; 32, Journal-boxes, Lubricating, Centrifugal; 33, Journal-boxes, Lubricating, Roller-applying; 34, Journal-boxes, Lubricating, Roller-applying, Elastically-supported, and 46, Journal-boxes, Lubricating, Materials for feeding oil; 121, STEAM-ENGINES, subclass 115, Lubricators; also the particular class in which the machine or device itself belongs.

Note.—Where the modification of a journal-box is no more than a hole to admit a lubricant or allow it to escape and a lubricating device is used in connection with such a journal-box, the device will go in class 184, LUBRICATION, unless there is a particular combination between the journal-box and the lubricating device.

Subclasses.

1. MISCELLANEOUS. Structures not otherwise classifiable used to lubricate rubbing surfaces and embraced under this class.

2. MINE-CAR LUBRICATION. Devices specifically intended and arranged to lubricate the wheels of mine-cars while in operation.

3. TRACK OR WHEEL LUBRICATION. Devices adapted for use on a car to oil the track or wheel-flange.

Search Classes—

184—LUBRICATION, subclasses 101, Lubricators, Roller, and 102, Lubricators, Swab.

137—WATER DISTRIBUTION, subclass 63, Irrigating and sprinkling, Carts.

4. WINDMILL LUBRICATION. Devices which are particularly adapted for use on a windmill to lubricate the bearings.

5. SLIDE-BEARING LUBRICATION. Devices for lubricating slide-bearings where the lubricating devices are practically part of the bearings. This subclass is limited to the lubricating of the bearing.

Note.—Where the claims are broader and include parts of the machine, the device goes to the machine class.

Search Classes—

90—GEAR-CUTTING, MILLING, AND PLANING.

101—PRINTING, subclass 4, Bed and cylinder machines, and the subclasses thereunder.

6. SYSTEMS. The combination of conveying-pipes with a source of lubricant-supply and arranged to lubricate the several bearings of a machine or of several machines from a common source of supply.

Note.—In connection with the above there may or may not be an arrangement to return the oil not used to the source of supply.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 36, Burners, Liquid-fuel, Fuel-feeding, and the subclasses thereunder.

7. SYSTEMS. CONVEYING DEVICES. Devices specifically intended to convey lubricant from the reservoir to the bearing.

Note.—This subclass is distinguished from subclasses 12, Conveyers, and 61, Lubricators, Force-feed, Conveyers, by the fact that here the conveying means is a tube, a wire, or similar device and the lubricant is conveyed through or along the same.

8. SYSTEMS, CONVEYING DEVICES, CONTINUOUS-TUBE. As indicated, there is a continuous tube from the source of lubricant to the bearing.

9. SYSTEMS, CONVEYING DEVICES, SLIDING-TUBE. The conveying means is two telescoping tubes which slide. Usually one tube is fastened to a moving bearing, while the other is fastened to a stationary part.

CLASS 184—Continued.

Search Class—

137—WATER DISTRIBUTION, subclass 78, Mains and pipes Systems.

10. SYSTEMS, CONVEYING DEVICES, WIPERS. A tube or some collecting device is secured to a moving bearing. This tube carries a member which at some point in its movement wipes a drop of oil from the outlet of the reservoir of oil which is permanently secured.

Search Class—

184—LUBRICATION, subclass 63, Lubricators, Force-feed, Conveyers, Bucket, Rotary.

11. SYSTEMS, SPLASH. The oil is splashed by some moving part of the machine to be lubricated. The oil collects in receptacles placed so as to feed the oil so collected to the bearings.

Note.—This subclass is distinguished from subclass 13, Splash, in this class, by the fact that there are means to catch the lubricant when splashed and to carry it to a bearing.

12. CONVEYERS. Devices for conveying the lubricant from a reservoir to a bearing. They are more complicated than those of subclass 61, Lubricators, Force-feed, Conveyers.

13. SPLASH. Devices in which a moving part strikes a body of lubricant and splashes the oil about, so that it comes in contact with parts to be lubricated.

14. LUBRICATORS. Primarily receptacles for holding lubricant having an outlet, and associated with this receptacle so as practically to be a part of it, is some arrangement which regulates and causes (either one or both) the oil to be delivered through the outlet. These devices as above described are complete in themselves and may be removed as an entirety from one machine and placed on another.

Search Classes—

48—GAS, HEATING AND ILLUMINATING.

158—LIQUID AND GASEOUS FUEL BURNERS.

210—WATER PURIFICATION.

221—DISPENSING-CANS.

15. LUBRICATORS, BELT, CABLE, OR CHAIN LUBRICATORS. Devices intended to apply lubricant to a belt, cable, or chain and constructed with such purpose in view.

Note.—Devices which clean and lubricate a belt, cable, or chain are found in this subclass.

Note.—Devices for cleaning chains are found in class 208, VELOCIPEDS, subclass 151, Cleaner attachments.

16. LUBRICATORS, BELT, CABLE, OR CHAIN LUBRICATORS, SWAB-APPLIED. Devices for applying the lubricant by a swab.

17. LUBRICATORS, BELT, CABLE, OR CHAIN LUBRICATORS, ROLLER-APPLIED. Devices for applying the lubricant by roller.

18. LUBRICATORS, CYLINDER-LUBRICATORS. Devices designed and adapted especially for lubricating an engine-cylinder.

19. LUBRICATORS, CYLINDER-LUBRICATORS, SWAB-APPLIED. The lubricant is applied by a swab usually fastened to the piston-rod.

20. LUBRICATORS, CYLINDER-LUBRICATORS, ROTARY-SWAB-APPLIED. Cylinder-lubricators in which the lubricant is applied by a rotary swab.

21. LUBRICATORS, ELEVATOR-GUIDE LUBRICATORS. Devices intended to be placed upon an elevator-car and in position to lubricate the slideways of the same.

22. LUBRICATORS, ELEVATOR-GUIDE LUBRICATORS SWAB. The lubricant is applied by a swab.

Search Class—

184—LUBRICATION, subclass 102, Lubricators, Swab.

23. LUBRICATORS, ELEVATOR-GUIDE LUBRICATORS, ROTARY-BRUSH OR ROLLER. The lubricant is applied by a roller or a rotating brush.

Search Class—

184—LUBRICATION, subclass 101, Lubricators, Roller.

24. LUBRICATORS, PISTON-ROD LUBRICATORS. As the name indicates, these devices are adapted to lubricate a piston-rod.

Search Class—

121—STEAM-ENGINES, subclass 107, Packing and the subclasses thereunder.

25. LUBRICATORS, PISTON-ROD LUBRICATORS, SWAB. Piston-rod lubricators in which the lubricant is applied by a stationary swab.

CLASS 184—Continued.

Search Class—

184—LUBRICATION, subclasses 16, Lubricators, Belt, Cable, or chain lubricators, Swab-applied; 22, Lubricators, Elevator-guide lubricators, Swab; and 102, Lubricators, Swab.

LUBRICATORS, FORCE-FEED. In this type the lubricant in the reservoir is placed under pressure by some means, and thus forced to its destination.

Search Class—

221—DISPENSING-CANS, subclass 47, Hand-oilers, Forced-feed.

26. **LUBRICATORS, FORCE-FEED, PUMPS.** A pump is used to force the lubricant from the container to its destination. Note.—Similar structures are to be found in class 103, PUMPS.

Search Classes—

73—MEASURING INSTRUMENTS, subclasses 154, Liquid-measures, Pumps, and 155, Liquid-measures, Pumps, Rotary.

123—INTERNAL-COMBUSTION ENGINES, subclass 139, Charge-forming devices, Oil-feeding, Pumps.

27. **LUBRICATORS, FORCE-FEED, PUMPS, MECHANICALLY-OPERATED.** The pump-piston is mechanically connected to some source of power, usually a moving part of the machine upon which the lubricant-receptacle is mounted.

Search Classes—

184—LUBRICATION, subclasses 71, Lubricators, Gravity-feed, Automatic cut-off, Rotatable valve, Mechanically-operated, and 74, Lubricators, Gravity-feed, Automatic cut-off, Vertically-reciprocating valve, Mechanically-operated.

73—MEASURING INSTRUMENTS, subclasses 154, Liquid-measures, Pumps, and 155, Liquid-measures, Pumps, Rotary.

221—DISPENSING-CANS, subclass 47, Hand-oilers, Forced-feed.

28. **LUBRICATORS, FORCE-FEED, PUMPS, HAND-OPERATED.** The pump-piston is operated by hand.

Search Class—

73—MEASURING INSTRUMENTS, subclasses 154, Liquid-measures, Pumps, and 155, Liquid-measures, Pumps, Rotary.

29. **LUBRICATORS, FORCE-FEED, PUMPS, FLUID-OPERATED.** The piston is actuated by intermittent application of fluid under pressure to the said piston.

Search Class—

184—LUBRICATION, subclasses 72, Lubricators, Gravity-feed, Automatic cut-off, Rotatable-valve, Fluid-pressure operated, and 76, Lubricators, Gravity-feed, Automatic cut-off, Vertically-reciprocating valve, Fluid-pressure operated.

30. **LUBRICATORS, FORCE-FEED, PUMPS, PENDULUM-OPERATED.** The piston is actuated by means of a pendulum which is vibrated by the motion of the machinery.

Search Class—

184—LUBRICATION, subclasses 73, Lubricators, Gravity-feed, Automatic cut-off, Rotatable-valve, Pendulum-operated, and 78, Lubricators, Gravity-feed, Automatic cut-off, Vertically-reciprocating valve, Pendulum-operated.

31. **LUBRICATORS, FORCE-FEED, PUMPS, ROTARY.** Pumps of the rotary type where the lubricant is forced by the direct pressure of continuously-revolving vanes or equivalents.

32. **LUBRICATORS, FORCE-FEED, PUMPS, OSCILLATING-PISTON.** The piston is so arranged that by its own oscillation it covers and uncovers ports, so that during its forcing stroke a lubricant is forced through an outlet-passage and upon its suction-stroke the lubricant is admitted to the pump-cylinder.

33. **LUBRICATORS, FORCE-FEED, PUMPS, ROTARY PISTON AND VALVE.** The pump is mounted upon the valve and both rotate together. In action it is like subclass 35, Lubricators, Force-feed, Pumps, Rotary distributing-valve, hereinafter defined.

34. **LUBRICATORS, FORCE-FEED, PUMPS, OSCILLATING DISTRIBUTING-VALVE.** The discharge-valve from the pump-cylinder oscillates so that the outlet-passage is in connection with the pump-cylinder during the forcing stroke and the intake-passage is connected with the pump-cylinder at the suction-stroke of the piston.

35. **LUBRICATORS, FORCE-FEED, PUMPS, ROTARY DISTRIBUTING-VALVE.** The discharge-valve from the pump-cylinder rotates continuously, and the ports are so arranged that upon the forcing stroke of the piston oil is distributed to a single outlet or several outlets and upon the suction-stroke the valve is in position to allow the lubricant to enter the pump-cylinder from a source of supply.

Search Class—

184—LUBRICATION, subclasses under Lubricators, Gravity-feed, Automatic cut-off, Rotatable-valve.

36. **LUBRICATORS, FORCE-FEED, PUMPS, ATTACHMENTS.** Things not part of the lubricator-pump proper, but used in connection with the same, such as special valves, etc.

LUBRICATORS, FORCE-FEED, FOLLOWERS. Lubricators wherein the lubricant is forced by a piston, which follows and pushes the lubricant from the receptacle.

37. **LUBRICATORS, FORCE-FEED, FOLLOWERS, MECHANICALLY-OPERATED.** The follower is moved by a mechanical connection between it and some actuating source.

38. **LUBRICATORS, FORCE-FEED, FOLLOWERS, HAND-OPERATED.** The follower is actuated by hand to force out the lubricant.

CLASS 184—Continued.

39. **LUBRICATORS, FORCE-FEED, FOLLOWERS, FLUID-OPERATED.** The follower is moved by fluid-pressure.

Search Class—

123—INTERNAL-COMBUSTION ENGINES, subclass 119, Charge-forming devices.

40. **LUBRICATORS, FORCE-FEED, FOLLOWERS, FLUID-OPERATED, FLUID-RETURN.** Fluid-operated followers which are returned by fluid-pressure.

Search Class—

221—DISPENSING-CANS, subclass 47, Hand-oilers, Forced-feed.

41. **LUBRICATORS, FORCE-FEED, FOLLOWERS, FLUID-OPERATED, SPRING-ASSISTED.** Fluid-operated followers which are assisted by the expansive force of a spring.

42. **LUBRICATORS, FORCE-FEED, FOLLOWERS, FLUID-OPERATED, SPRING-RETURN.** Fluid-operated followers which are returned by a spring.

43. **LUBRICATORS, FORCE-FEED, FOLLOWERS, CENTRIFUGAL.** Followers actuated by centrifugal force, due to the rotation of the object upon which the lubricator is placed.

44. **LUBRICATORS, FORCE-FEED, FOLLOWERS, PENDULUM-OPERATED.** Followers actuated by mechanism operated by a pendulum, which pendulum is swung by the motion of the machine.

45. **LUBRICATORS, FORCE-FEED, FOLLOWERS, SPRING-OPERATED.** The expanding force of a spring moves the piston to expel the lubricant.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 50, Burners, Liquid-fuel, Fuel-feeding, Tanks, Force-feed.

46. **LUBRICATORS, FORCE-FEED, FOLLOWERS, WEIGHT-OPERATED.** A weight upon the follower moves the same.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 50, Burners, Liquid-fuel, Fuel-feeding, Tanks, Force-feed.

47. **LUBRICATORS, FORCE-FEED, FOLLOWERS, BALANCED-PISTON.** There are two receptacles, and the followers are connected so that when one follower moves in one direction the other follower moves in the opposite direction.

48. **LUBRICATORS, FORCE-FEED, FOLLOWERS, LOCKING DEVICES.** In this subclass there are means provided so that the follower is locked against moving backward.

Search Class—

184—LUBRICATION, subclasses 45, Lubricators, Force-feed, Followers, Spring-operated, and 46, Lubricators, Force-feed, Followers, Weight-operated.

LUBRICATORS, FORCE-FEED, FLUID-OPERATED. Lubricators wherein the lubricant is subjected directly to a fluid-pressure. The fluid may be air, steam, or water.

49. **LUBRICATORS, FORCE-FEED, FLUID-OPERATED, CONDENSATION DISPLACEMENT.** Steam is admitted to some receptacle, where it condenses, and then the water of condensation flows into the lubricant-receptacle and displaces the lubricant, and thus forces it out.

Search Class—

184—LUBRICATION, subclass 55, Lubricators, Force-feed, Fluid-operated, Steam or air.

50. **LUBRICATORS, FORCE-FEED, FLUID-OPERATED, CONDENSATION DISPLACEMENT, DOUBLE-PASSAGE.** There are two passages to the interior. Through one passage steam and water of condensation are admitted, and the lubricant displaced flows out the other to its destination.

51. **LUBRICATORS, FORCE-FEED, FLUID-OPERATED, CONDENSATION DISPLACEMENT, SINGLE-PASSAGE.** The receptacle has but one passage to the interior, and the steam must enter and the lubricant flow out this same passage.

52. **LUBRICATORS, FORCE-FEED, FLUID-OPERATED, CONDENSATION DISPLACEMENT, CHOKE-PLUGS.** Devices used in connection with condensation-displacement lubricators and placed on a steam-chest or analogous device to prevent back pressure in the lubricator.

53. **LUBRICATORS, FORCE-FEED, FLUID-OPERATED, CONDENSATION DISPLACEMENT, AUXILIARY FEDDING-RECEPTACLES.** Receptacles attached to the lubricator by means of which lubricant may be fed to a bearing in addition to the lubricant regularly supplied or can be used in case any accident occurs to the principal lubricator.

54. **LUBRICATORS, FORCE-FEED, FLUID-OPERATED, DISPLACEMENT.** The lubricant is displaced in the receptacle by water, and thus forced out.

Search Classes—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 50, Burners, Liquid-fuel, Fuel-feeding, Tanks, Force-feed.

210—WATER-PURIFICATION, subclass 19, Filters, Chemical-feeders.

55. **LUBRICATORS, FORCE-FEED, FLUID-OPERATED, STEAM OR AIR.** The fluid used to force the lubricant is steam or air.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 50, Burners, Liquid-fuel, Fuel-feeding, Tanks, Force-feed, and 77, Burners, Spray, Atomizers.

CLASS 184—Continued.

56. LUBRICATORS, FORCE-FEED, FLUID-OPERATED, STEAM OR AIR, INJECTORS. The lubricant passes from the receptacle, and as it leaves it is brought into contact with a stream of air or steam and divided into fine particles and carried by the fluid to the part to be lubricated.

Search Classes—

- 184—LUBRICATION, subclass 59, Lubricators, Force-feed, Fluid-operated, Steam or air, Suction, Vented.
48—GAS, HEATING AND ILLUMINATING, subclass 153, Carbureters, Oil-feed, Rotary.
123—INTERNAL-COMBUSTION ENGINES, subclasses 131, Charge-forming devices, Atomizers; 132, Charge-forming devices, Atomizers, Constant-level, and 138, Charge-forming devices, Oil-feeding, Rotary.
158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 74, Burners, Liquid-fuel, Spray, Oil, air, and steam; 75, Burners, Liquid-fuel, Spray, Oil and steam, and 76, Burners, Liquid-fuel, Spray, Oil and air.

57. LUBRICATORS, FORCE-FEED, FLUID-OPERATED, STEAM OR AIR, INITIAL PRESSURE. Force-feed lubricators comprising an auxiliary tank in connection with the lubricant-receptacle, which tank is charged with compressed air, and this air is used to force the lubricant from its receptacle.

58. LUBRICATORS, FORCE-FEED, FLUID-OPERATED, STEAM OR AIR, SUCTION. The lubricant is drawn by suction to the part to be lubricated.

Search Classes—

- 184—LUBRICATION, subclass 76, Lubricators, Gravity-feed, Automatic cut-off, Vertically-reciprocating valve, Fluid-pressure operated.
123—INTERNAL-COMBUSTION ENGINES, subclass 132, Charge-forming devices, Atomizers, Constant-level.

59. LUBRICATORS, FORCE-FEED, FLUID-OPERATED, STEAM OR AIR, SUCTION, VENTED. Force-feed, fluid-operated suction lubricators having an opening of some kind which permits the air to come into the receptacle, the pressure of the air assisting the suction.

60. LUBRICATORS, FORCE-FEED, FLUID-OPERATED, ABRASION. The lubricant lies directly in the path of a fluid under pressure, which mechanically wears off small particles of lubricant from a mass of solid lubricant and carries it to its destination.

Search Classes—

- 4—BATHS AND CLOSETS, subclass 30, Disinfecting apparatus.
210—WATER PURIFICATION, subclass 19, Filters, Chemical-feeders.

61. LUBRICATORS, FORCE-FEED, CONVEYERS. The lubricant is forced to its destination by means of a conveyor, such as a screw, or by buckets and chain.

Search Class—

- 48—GAS, HEATING AND ILLUMINATING, subclass 153, Carbureters, Oil-feed, Rotary.

62. LUBRICATORS, FORCE-FEED, CONVEYERS, BUCKET. A bucket is used to elevate the lubricant and convey it to some outlet.

Search Class—

- 184—LUBRICATION, subclass 10, Systems, Conveying devices, Wipers.

63. LUBRICATORS, FORCE-FEED, CONVEYERS, BUCKET, ROTARY. The title is self-explanatory.

64. LUBRICATORS, FORCE-FEED, CAPILLARY ATTRACTION. The lubricant is fed through a wick by capillary attraction.

Search Classes—

- 184—LUBRICATION, subclass 102, Lubricators, Swab.
48—GAS HEATING AND ILLUMINATING, subclass 25, Acetylene, Generators, Water-feed, Capillary.

65. LUBRICATORS, GRAVITY-FEED. Lubricators where the lubricant is fed by gravity and the flow is usually controlled by a valve which is operated by hand.

Search Classes—

- 48—GAS HEATING AND ILLUMINATING, subclass 4, Acetylene, Generators, Water-feed.
123—INTERNAL-COMBUSTION ENGINES, subclasses 119, Charge-forming devices; 132, Charge-forming devices, Atomizers, Constant-level, and 136, Charge-forming devices, Oil-feeding.
158—LIQUID AND GASEOUS FUEL BURNERS, subclass 52, Burners, Liquid-fuel, Fuel-feeding, Tanks, Drop-feed.

66. LUBRICATORS, GRAVITY-FEED, AUTOMATIC CUT-OFF. The feed is intermittently cut off and the valve is automatically actuated from some extraneous source, such as the machine which is being lubricated.

Search Class—

- 123—INTERNAL-COMBUSTION ENGINES, subclass 137, Charge-forming devices, Oil-feeding, Reciprocating.

67. LUBRICATORS, GRAVITY-FEED, AUTOMATIC CUT-OFF, ELECTRICALLY-OPERATED. The valve is actuated by an electromagnet, solenoid, or similar electrical device.

68. LUBRICATORS, GRAVITY-FEED, AUTOMATIC CUT-OFF, THERMOSTATS. The valve is caused to operate by the expansion of some metal, which expansion is caused by the heat generated by the friction of the bearing to which the lubricator is attached.

CLASS 184—Continued.

69. LUBRICATORS, GRAVITY-FEED, AUTOMATIC CUT-OFF, VIBRATORS. The valve is usually a ball or some piece of metal of such shape that the valve seats and unseats due to the vibration of the machine to which the lubricator is attached.

70. LUBRICATORS, GRAVITY-FEED, AUTOMATIC CUT-OFF, CENTRIFUGAL. Devices attached to a rotating machine part. During the rotation of the part the oil is splashed and enters ports near the top of an outlet-pipe to a bearing. When not in motion, the level of the oil is below the ports in the tube. Therefore there is no feeding.

LUBRICATORS, GRAVITY-FEED, AUTOMATIC CUT-OFF, ROTATABLE-VALVE. The valve is rotated to cause intermittent feeding, substantially in the manner outlined in the definitions of the subclasses under Vertically-reciprocating valve.

71. LUBRICATORS, GRAVITY-FEED, AUTOMATIC CUT-OFF, ROTATABLE-VALVE, MECHANICALLY-OPERATED. The valve is rotated by direct mechanical connection with some source of power, substantially in the manner outlined in the definitions of the subclasses under Vertically-reciprocating valve.

Note.—See also in this class, subclasses 27, Lubricators, Force-feed, Pumps, Mechanically-operated; 33, Lubricators, Force-feed, Pumps, Rotary piston and valve, and 35, Lubricators, Force-feed, Pumps, Rotary distributing-valve.

Search Class—

- 123—INTERNAL-COMBUSTION ENGINES, subclass 130, Charge-forming devices, Valve-controlled oil, Positively-operated.

72. LUBRICATORS, GRAVITY-FEED, AUTOMATIC CUT-OFF, ROTATABLE-VALVE, FLUID-PRESSURE OPERATED. The valve is rotated by fluid-pressure, substantially in the manner outlined in the definitions of the subclasses under Vertically-reciprocating valve.

Search Class—

- 184—LUBRICATION, subclasses 29, Lubricators, Force-feed, Pumps, Fluid-operated; 33, Lubricators, Force-feed, Pumps, Rotary piston and valve, and 35, Lubricators, Force-feed, Pumps, Rotary distributing-valve.

73. LUBRICATORS, GRAVITY-FEED, AUTOMATIC CUT-OFF, ROTATABLE-VALVE, PENDULUM-OPERATED. The valve is rotated by a pendulum, substantially in the manner outlined in the definitions of the subclasses under Vertically-reciprocating valve.

Search Class—

- 184—LUBRICATION, subclasses 30, Lubricators, Force-feed, Pumps, Pendulum-operated; 33, Lubricators, Force-feed, Pumps, Rotary piston and valve, and 35, Lubricators, Force-feed, Pumps, Rotary distributing-valve.

LUBRICATORS, GRAVITY-FEED, AUTOMATIC CUT-OFF VERTICALLY-RECIPROCATING VALVE. In this group of subclasses the valve regulating the feed is reciprocated vertically.

74. LUBRICATORS, GRAVITY-FEED, AUTOMATIC CUT-OFF, VERTICALLY RECIPROCATING VALVE, MECHANICALLY-OPERATED. The valve is operated by mechanical connections to some source of power and caused to vertically reciprocate.

Search Class—

- 123—INTERNAL-COMBUSTION ENGINES, subclass 130, Charge-forming devices, Valve-controlled oil, Positively-operated.

75. LUBRICATORS, GRAVITY-FEED, AUTOMATIC CUT-OFF, VERTICALLY-RECIPROCATING VALVE, MECHANICALLY-OPERATED, SPRING-RETAINED. The valve is caused to return to its initial position by means of a spring.

76. LUBRICATORS, GRAVITY-FEED, AUTOMATIC CUT-OFF, VERTICALLY-RECIPROCATING VALVE, FLUID-PRESSURE OPERATED. The valve is subject to fluid-pressure intermittently and causes the valve to vertically reciprocate.

Search Classes—

- 184—LUBRICATION, subclasses 58, Lubricators, Force-feed, Fluid-operated, Steam or air, Suction, and 59, Lubricators, Force-feed, Fluid-operated, Steam or air, Suction, Vented.
123—INTERNAL-COMBUSTION ENGINES, subclass 129, Charge-forming devices, Valve-controlled oil.

77. LUBRICATORS, GRAVITY-FEED, AUTOMATIC CUT-OFF, VERTICALLY-RECIPROCATING VALVE, CENTRIFUGALLY-OPERATED. The valve is caused to operate because of the rotary motion of the object to which it is attached.

Search Class—

- 184—LUBRICATION, subclass 70, Lubricators, Gravity-feed, automatic cut-off, Centrifugal.

78. LUBRICATORS, GRAVITY-FEED, AUTOMATIC CUT-OFF, VERTICALLY-RECIPROCATING VALVE, PENDULUM-OPERATED. The valve is operated by a pendulum. Due to the motion of the object to which the lubricator is attached the pendulum is caused to vibrate.

79. LUBRICATORS, GRAVITY-FEED, AUTOMATIC CUT-OFF, HORIZONTALLY-RECIPROCATING VALVE. The valve in its operation slides horizontally and may be operated either by the motion of the machine or by some outside source.

CLASS 184—Continued.

80. LUBRICATORS, GRAVITY-FEED, COMBINED CLOSURE AND VALVE. Lubricators having novelty in the closure for the cup as well as the valve which regulates the flow of lubricant.

Search Classes—

- 184—LUBRICATION, subclass 88, Lubricators, Oil-cup closures.
217—WOODEN RECEPTACLES, subclass 56, Boxes, Closures.
221—DISPENSING-CANS, subclass 2, Filling-cans, Closures.

81. LUBRICATORS, GRAVITY-FEED, MULTIPLE-FEED. A single receptacle has several outlets leading to several bearings.

Search Class—

- 123—INTERNAL-COMBUSTION ENGINES, subclass 127, Charge-forming devices, Multiple oil-supply.

82. LUBRICATORS, GRAVITY-FEED, VERTICALLY-MOVABLE VALVE. The valve is set to give a certain feed, usually by screw, and the valve is opened or closed by a bodily vertical movement of the valve-stem.

83. LUBRICATORS, GRAVITY-FEED, MEASURING-VALVE. The controlling-valve is constructed so as to deliver a definite quantity of lubricant at one time on turning the valve.

Search Class—

- 73—MEASURING INSTRUMENTS, subclass 153, Liquid-measures, and the subclasses thereunder.

84. LUBRICATORS, GRAVITY-FEED, AIR-TIGHT RECEPTACLE. The lubricant-container has only one opening. Upon being inverted the receptacle is air-tight, and the feed of the oil is regulated by the vacuum created in the top of the receptacle.

85. LUBRICATORS, GRAVITY-FEED, SIPHONS. The feed is accomplished by the use of a siphon.

Search class—

- 158—LIQUID AND GASEOUS FUEL BURNERS, subclass 51, Burners, Liquid-fuel, Tanks, Siphon-feed.

86. LUBRICATORS, GRAVITY-FEED, LOCKING-VALVE. The valves have means coacting with the valve-rod to lock the same in any adjusted position.

Search Class—

- 151—NUT AND BOLT LOCKS.

87. LUBRICATORS, GRAVITY-FEED, FIBER VALVE. The outlet from the receptacle is covered by a mass of fibrous matter. This mass may be compressed, and so regulate the outflow of lubricant.

88. LUBRICATORS, OIL-CUP CLOSURES. In this class of devices are the coverings or closures for lubricant-cups of any description comprehended in the group of lubricators.

Search Classes—

- 184—LUBRICATION, subclass 80, Lubricators, Gravity-feed, Combined closure and valve.
221—DISPENSING-CANS, subclass 2, Filling-cans, Closures.

89. LUBRICATORS, OIL-CUP CLOSURES, DEPRESSIBLE CAP. The part that closes the opening is held in place in a closed position by a spring and is adapted to have the nose of an oil-can push back the closing-piece and admit lubricant.

90. LUBRICATORS, OIL-CUP CLOSURES, HINGED-COVER. The cover of the cup is hinged.

Search Class—

- 217—WOODEN RECEPTACLES, subclass 56, Boxes, Closures.

91. LUBRICATORS, OIL-CUP CLOSURES, HINGED-COVER, SPRING-CONTROLLED. The cover is returned to its closed position by a spring.

Search Class—

- 217—WOODEN RECEPTACLES, subclass 56, Boxes, Closures.

92. LUBRICATORS, OIL-CUP CLOSURES, ROTATABLE-COVER. The cover upon being rotated uncovers an opening through which lubricant can be admitted to the cup.

93. LUBRICATORS, OIL-CUP CLOSURES, ROTATABLE-COVER, SPRING-CONTROLLED. Devices in which the cover is brought back to its initial or closed position by a spring.

CLASS 184—Continued.

94. LUBRICATORS, OIL-CUP CLOSURES, SLIDABLE-COVER. The cover slides, and so uncovers an opening for the admission of lubricant.

95. LUBRICATORS, OIL-CUP CLOSURES, SLIDABLE-COVER, SPRING-CONTROLLED. The cover is returned to its initial or closed position by a spring.

96. LUBRICATORS, SIGHT-FEEDS. Devices attached to a lubricator through which the lubricant flows as it is discharged and by means of which the quantity and rate of discharge may be observed.

Search Class—

- 73—MEASURING INSTRUMENTS, subclass 54, Gages, Water.

97. LUBRICATORS, SIGHT-FEEDS, ATTACHMENTS. Auxiliary attachments to a sight-feed, such as reflectors, shields, etc.

98. LUBRICATORS, LIQUEFIERS. The heat generated by the friction of the bearing parts melts a solid or semisolid in the cup and allows it to run onto the bearing.

99. LUBRICATORS, LIQUEFIERS, SOLID-STICK. A solid stick of lubricant is in contact with the bearing. It is melted by the friction.

100. LUBRICATORS, SLIDE-BEARING LUBRICATORS. Devices fastened to a moving part of a slide-bearing and applying lubricant to the bearing parts. They are separate from the structure which they lubricate and may be removed from the same, in which respect they distinguish from subclass 5, Slide-bearing lubrication, in this class.

101. LUBRICATORS, ROLLER. Devices not otherwise classifiable for applying lubricant to a bearing by a roll, usually covered with felt.

Search Classes—

- 184—LUBRICATION, subclasses 3, Track or wheel lubrication, and 17, Lubricators, Belt, cable, or chain lubricators, Roller-applied.

- 65—KITCHEN AND TABLE ARTICLES, subclass 12, Culinary.

102. LUBRICATORS, SWAB. Miscellaneous devices for applying lubricant to a bearing by a swab.

Search Class—

- 184—LUBRICATION, subclasses 3, Track or wheel lubrication; 16, Lubricators, Belt, cable, or chain lubricators, Swab-applied, and 64, Lubricators, Force-feed, Capillary attraction.

103. LUBRICATORS, CONSTANT-LEVEL. Devices for automatically maintaining a constant level of lubricant in the distributing-reservoir.

Search Classes—

- 48—GAS, HEATING AND ILLUMINATING, subclass 151, Carbureters, Oil-feed, Float-valves.

- 123—INTERNAL-COMBUSTION ENGINES, subclass 132, Charge-forming devices, Atomizers, Constant-level.

- 158—LIQUID AND GASEOUS FUEL BURNERS, subclasses 38, Burners, Liquid-fuel, Fuel-feeding, Maintained oil-level, Float-controlled, and 39, Burners, Liquid-fuel, Fuel-feeding, Maintained oil-level, Float-controlled, Liquid seal.

104. LUBRICATORS, HEATING AND COOLING DEVICES. Devices for either reducing the lubricant in the cup to a liquid state and also to keep it so or to cool the lubricant where it would be subject to excessive heat.

105. LUBRICATORS, REFILLING DEVICES. Devices used to refill lubricator-cups, usually without disturbing the apparatus in its function.

Search Class—

- 221—DISPENSING-CANS, subclass 1, Filling-cans, and the subclasses thereunder.

106. LUBRICATORS, DRIP-PANS. Devices placed beneath a bearing which catch the unused oil and either hold the same or have means connected therewith to return it to the reservoir.

Search Classes—

- 184—LUBRICATION, subclass 6, Systems.

- 137—WATER DISTRIBUTION, subclass 4, Cocks and faucets, Reciprocating valves.

- 237—HEAT DISTRIBUTING SYSTEMS, subclass 19, Steam radiators, Attachments.

CLASS 185.—MOTORS

DEFINITIONS.

Class.

This is the miscellaneous and parent class of motors. It embraces motors and their elements for which specific classes and subclasses have not been elsewhere provided.

This class in part parallels class 58, HOROLOGY. When a device is capable of general application, it will be classified in this class, unless there is a more specific subclass to receive it in Horology.

Subclasses.

1. MISCELLANEOUS. Motors not otherwise classifiable.
2. COMPOSITE. Motors composed of two or more prime movers, with separate trains running to a common transmitting element, at least one of which prime movers is a horse power, a pivoted seat, a spring, or a weight.
Note.—If a motor coming within the terms of the above definition includes as one of the prime movers a weight or a spring which derives its energy from another of the prime movers and specific structure of that other prime mover is included in the claims, the patent is classified with reference to that other prime mover and a cross reference is placed in this subclass. If that other prime mover is classifiable in this class, the definition of this subclass governs the classification.
3. COMPOSITE, HORSE-POWER TYPE. Composite motors in which energy of animals is converted into mechanical energy in all the prime movers.
4. COMPOSITE, WEIGHT. Composite motors in which all the prime movers are weights.
5. COMPOSITE, WEIGHT, ESCAPEMENT-CONTROLLED. Composite weight motors containing escapements.
Note.—By the term "escapement" as used throughout this class is meant a device which receives energy from a power element and by virtue thereof performs a cycle of movements in which the escapement first causes the power element to cease its motion and later permits it to resume its motion.
Throughout this class if the escapement includes a spring or a weight which derives its energy from another motor the device is classified in the appropriate *Winding Motor* subclass instead of in the *Escapement controlled* subclass and a cross reference is placed in the appropriate *Winding, Overwinding preventers* subclass.
Search Classes—
185—MOTORS, subclasses 7, Composite, Weight, Winding, Motor, and the subclass thereunder; 9, Composite, Spring; 13, Composite, Spring, Winding, Overwinding preventers; 31, Weight, Escapement controlled; 35, Weight, Winding, Overwinding preventers; 38, Spring, Escapement controlled; 43, Spring, Winding, Overwinding preventers, and 46, Escapements; 58, HOROLOGY, subclasses 27, Clocks, Electric, Secondary, Escapement; 47, Clocks, Winding, Motors, pneumatic; 48, Clocks, Winding, Motors, spring; 49, Clocks, Winding, Motors, thermal, and 116, Escapements, and the subclasses thereunder, and 227, FIRE ESCAPES, subclass 2, Automatic speed governors, Escapement-check, for escapements.
6. COMPOSITE, WEIGHT, WINDING. Composite-motors, weight, including special devices for raising the weights.
Search Classes—
185—MOTORS, subclasses 10, Composite, Spring, Winding, and the subclass thereunder; 32, Weight, Winding, and the subclasses thereunder, and 39, Spring, Winding, and the subclasses thereunder; 57, HOISTING, subclass 22, Capstans and windlasses, and the subclasses thereunder; 58, HOROLOGY, subclasses 40, Clocks, Electric, Winding, and the subclass thereunder; 46, Clocks, Winding, and the subclasses thereunder; 73, Watches, Stem-winding, and 80, Watches, Winding, and the subclasses thereunder; 74, MACHINE ELEMENTS, subclass 53, Intermittent-grip devices, and the subclasses thereunder; 81, TOOLS, subclass 7.5, Special Watchmakers', Mainspring-winders, and 242, WINDING AND REELING, subclass 107, Reeling and unreeling, Reels, Spring drum type, and the subclasses thereunder, for mechanism for operating winding drums.
7. COMPOSITE, WEIGHT, WINDING, MOTOR. Composite motors, weight, in which the weights are raised by motors.
Note.—If a claim coming within the terms of the above definition includes specific features of the prime mover (the winding motor), it is placed in the class which takes the prime mover and a cross reference is placed in this subclass, unless the winding motor itself is classifiable in this class.
Search Classes—
185—MOTORS, subclasses 11, Composite, Spring, Winding, Motor, and the subclass thereunder; 33, Weight, Winding, Motor, and the subclass thereunder; and 40, Spring, Winding, Motor, and the subclasses thereunder, and 58, HOROLOGY, subclasses 40, Clocks, Electric, Winding, and the subclass thereunder; 47, Clocks, Winding, Motors, pneumatic; 48, Clocks, Winding, Motors, spring, and 49, Clocks, Winding, Motors, thermal, for spring and weight motors which derive their energy from other motors.

CLASS 185.—Continued.

8. COMPOSITE, WEIGHT, WINDING, MOTOR, FLUID. Composite weight motors wound by fluid motors.
Search Classes—
185—MOTORS, subclasses 11, Composite, Spring, Winding, Motor; 30, Weight, Oscillating, Wave type; 34, Weight, Winding, Motor, Fluid, and 42, Spring, Winding, Motor, Fluid; 58, HOROLOGY, subclass 47, Clocks, Winding, Motors, pneumatic, and 61, HYDRAULIC ENGINEERING, subclasses 50, Tide-powers, Pivoted float, and 51, Tide-powers, Non-pivoted float, for spring and weight motors which derive their energy from fluid motors.
9. COMPOSITE, SPRING. Composite motors in which all the prime movers are springs.
10. COMPOSITE, SPRING, WINDING. Composite motors, spring, including special winding devices.
Search Classes—
185—MOTORS, subclass 6, Composite, Weight, Winding, together with the search classes thereunder noted, for mechanism for operating winding drums.
124—AIR-GUNS, CATAPULTS, AND TARGETS, subclasses 2, Catapults, Rubber-spring; 10, Guns, Air, Spring; 11, Guns, Air, Spring, Magazine; 12, Guns, Spring; 13, Guns, Spring, Magazine, and 14, Guns, Spring, Rubber, and 186, STORE SERVICE, subclass 10, Single impulse systems, Spring, and the subclass thereunder, for devices for compressing or distending springs.
11. COMPOSITE, SPRING, WINDING, MOTOR. Composite motors, spring, that are wound up by motors.
Note.—If a claim coming within the terms of the above definition includes specific features of the prime mover (the winding motor), it is placed in the class which takes the prime mover and a cross reference is placed in this subclass, unless the winding motor is itself classifiable in this class.
Search Class—
185—MOTORS, subclass 7, Composite, Weight, Winding, Motor, with the search classes noted thereunder, for spring and weight motors which derive their energy from other motors.
12. COMPOSITE, SPRING, WINDING, MOTOR, MOMENTUM TYPE. Composite spring motors containing shafts rotating in one direction only, which alternately wind the springs and receive power therefrom, the connecting trains coming to rest after each alternation.
Search Classes—
185—MOTORS, subclass 41, Spring, Winding, Motor, Momentum type; 21, CAREIAGES AND WAGONS, subclass 90, Motor vehicles; 105, RAILWAY ROLLING STOCK, subclass 27, Starters and brakes, and 123, INTERNAL COMBUSTION ENGINES, subclass 187, Starting devices, Mechanical, Motors, for other spring motors of the momentum type.
13. COMPOSITE, SPRING, WINDING, OVERWINDING-PREVENTERS. Devices for preventing the overwinding of the springs in composite spring motors.
Search Classes—
185—MOTORS, subclasses 6, Composite, Weight, Winding, and the subclasses thereunder; 35, Weight, Winding, Overwinding preventers, and 43, Spring, Winding, Overwinding preventers; 58, HOROLOGY, subclasses 40, Clocks, Electric, Winding; 41, Clocks, Electric, Winding, Self; 47, Clocks, Winding, Motors, pneumatic; 48, Clocks, Winding, Motors, spring, and 83, Watches, Winding, Overwinding preventers, and 123, INTERNAL COMBUSTION ENGINES, subclass 187, Starting devices, Mechanical, Motors, for overwinding preventers.
14. COMPOSITE, SPRING, WINDING, INDICATOR. Devices for showing the degree to which the springs of composite spring motors are wound or for operating an indicator when the springs need winding.
Search Classes—
185—MOTORS, subclasses 6, Composite, Weight, Winding, and the subclasses thereunder; 36, Weight, Winding, Indicator, and 44, Spring, Winding, Indicator, and 58, HOROLOGY, subclass 85, Watches, Winding, Indicator, for winding indicators.
15. HORSE-POWER TYPE. Miscellaneous motors, except composite, in which the energy of animals is converted into mechanical energy.
Search Classes—
185—MOTORS, subclasses 3, Composite, Horse power type; 26, Pivoted seat, and 28, Weight, Operator, and 74, MACHINE ELEMENTS, subclass 39, Cranks and levers, Hand levers.
16. HORSE-POWER TYPE, BELT-TREAD. Motors of the horse power type in which the animals tread upon an endless belt.
Search Class—
103—PUMPS, subclass 5, Cattle.
17. HORSE-POWER TYPE, DRUM. Motors of the horse power type in which the animals tread on the curved surfaces of pivoted drums.
18. HORSE-POWER TYPE, DISK. Motors of the horse power type in which the animals tread on pivoted disks.

CLASS 185—Continued.

19. HORSE-POWER TYPE, SWEEP. Motors of the horse power type in which the animals draw upon a sweep.
Search Class—
103—PUMPS, subclass 5, Cattle.
20. HORSE-POWER TYPE, SWEEP, DRIVING AND WHIPPING DEVICES. Sweep motors containing devices for driving or whipping the draft animals.
Search Classes—
185—MOTORS, subclass 24, Horse power type, Driving and whipping devices, for other driving and whipping devices found in motors of the horse power type.
21—CARRIAGES AND WAGONS, and 54, HARNESS, for driving and whipping devices of general application.
21. HORSE-POWER TYPE, SWEEP, SWEEPS. Structure unitary with the sweeps, together with that mounted thereon.
22. HORSE-POWER TYPE, SWEEP, SWEEPS, EQUALIZERS. Sweeps in which provision is made for equalizing the draft of the animals.
Search Class—
21—CARRIAGES AND WAGONS, subclass 76, Draft-equalizers, for equalizers of general application.
23. HORSE-POWER TYPE, DRAFT DEVICES. Draft devices for motors of the horse power type.
Search Classes—
185—MOTORS, subclass 22, Horse power type, Sweep, Sweeps, Equalizers.
21—CARRIAGES AND WAGONS, and 54, HARNESS, for draft devices of general application.
24. HORSE-POWER TYPE, DRIVING AND WHIPPING DEVICES. Miscellaneous devices for driving and whipping in motors of the horse power type.
Search Classes—
185—MOTORS, subclass 20, Horse power type, Sweep, Driving and whipping devices.
21—CARRIAGES AND WAGONS, and 54, HARNESS, for driving and whipping devices of general application.
25. HORSE-POWER TYPE, ANCHORS. Combinations, including anchors in motors of the horse power type.
Search Class—
189—METALLIC BUILDING STRUCTURES, subclass 90, Land-anchors, and the subclasses thereunder, for land anchors of general application.
26. PIVOTED SEAT. Lever motors in which the levers to which power is applied are pivoted seats.
Search Classes—
74—MACHINE ELEMENTS, subclass 39, Cranks and levers, Hand-levers, for hand levers and treadles.
31—DAIRY, subclass 36, Churns, Reciprocating, Rocking-seat mechanism; 68, LAUNDRY, subclass 21, Washing machines, Rocking and swinging, and 208, VELOCIPEDS, subclass 42, Polycycles, Figure, for other pivoted seat motors.
27. WEIGHT. Miscellaneous motors in which the prime movers are weights.
Search Classes—
185—MOTORS, subclass 4, Composite, Weight, and the subclasses thereunder.
60—MISCELLANEOUS HEAT ENGINE PLANTS, subclass 26, Gravity, for devices containing a fluid transferred from one part to another by the application of heat, thus causing the device to rotate or oscillate by gravity.
28. WEIGHT, OPERATOR. Motors in which energy is supplied by the weight of the operators.
Search Classes—
185—MOTORS, subclass 26, Pivoted seat, and 74, MACHINE ELEMENTS, subclass 39, Cranks and levers, Hand-levers.
29. WEIGHT, OSCILLATING. Miscellaneous weight motors in which the actuating weights oscillate.
Search Class—
58—HOROLOGY, subclass 30, Clocks, Electric, Pendulum, Actuated.
30. WEIGHT, OSCILLATING, WAVE TYPE. Oscillating weight motors in which the weights are mounted on supports subjected to irregular movements.
Search Classes—
40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 51, Changeable exhibitors, Pendulum operated; 68, HOROLOGY, subclass 52, Watches, Winding, Self-winders; 115, MARINE PROPULSION, subclass 5, Wave propulsion, Oscillating weight; 184, LUBRICATION, subclasses 30, Lubricators, Force-feed, Pumps, Pendulum-operated; 44, Lubricators, Force-feed, Followers, Pendulum-operated; 73, Lubricators, Gravity-feed, Automatic cut-off, Rotatable valve, Pendulum-operated, and 78, Lubricators, Gravity-feed, Automatic cut-off, Vertically reciprocating valve, Pendulum-operated, and 235, REGISTERS, subclass 105, Pedometers.
31. WEIGHT, ESCAPEMENT-CONTROLLED. Weight motors, including escapements.
Note.—See the note under subclass 5, Composite, Weight, Escapement controlled, and also the search notes thereunder.
32. WEIGHT, WINDING. Miscellaneous weight motors, including special winding features.
Note.—See the search notes under subclass 6, Composite, Weight, Winding.
33. WEIGHT, WINDING, MOTOR. Miscellaneous weight motors in which the weights are raised by motors.
Note.—See the note under subclass 7, Composite, Weight, Winding, Motor, and also the search notes thereunder, for spring and weight motors which derive their energy from other motors.

CLASS 185—Continued.

34. WEIGHT, WINDING, MOTOR, FLUID. Weight motors in which the weights are raised by fluid motors.
Note.—See the search notes under subclass 8, Composite, Weight, Winding, Motor, Fluid, for spring and weight motors deriving their energy from fluid motors.
35. WEIGHT, WINDING, OVERWINDING-PREVENTERS. Devices for preventing overwinding the weights of weight motors.
Note.—See the search notes under subclass 13, Composite, Spring, Winding, Overwinding preventers for overwinding preventers.
36. WEIGHT, WINDING, INDICATOR. Devices for indicating the degree to which the weights of weight motors are wound or for operating an indicator when the weights need winding.
Note.—See the search notes under subclass 14, Composite, Spring, Winding, Indicator, for winding indicators.
37. SPRING. Miscellaneous motors in which the prime movers are springs.
Search Classes—
185—MOTORS, subclass 9, Composite, Spring, and the subclasses thereunder.
40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 85, Changeable exhibitors, Single reel and web, Spring rewind; 43, FISHING AND TRAPPING, subclass 33, Fishing, Reels, Spring operated; 46, GAMES AND TOYS, subclass 8, Billiard appliances, Chalk cups; 51, GRINDING AND POLISHING, subclass 16, Metal, Strops, hones, and rifles; 54, HARNESS, subclass 70, Checking and unchecking devices; 68, LAUNDRY, subclass 14, Clothes-line reels; 73, MEASURING INSTRUMENTS, subclass 49, Measures, Tape; 156, CURTAINS, SHADES, AND SCREENS, subclass 36, Shade, Rollers, Spring; 175, ELECTRICITY, GENERAL APPLICATIONS, subclass 289, Switches, Mechanical, Rotary; 179, TELEPHONY, subclass 155, Supports, Suspension, Reels; 191, ELECTRICITY, ELECTRIC RAILWAYS, subclass 35, Systems, Current distribution, Overhead, Trolleys, Catchers; 242, WINDING AND REELING, subclasses 88, Reeling and unreeling, Reels, Carriers, Hose, Wheeled, Automatic winders; 98, Reeling and unreeling, Reels, Carriers, Hand or body, Spring drum article holders; 102, Reeling and unreeling, Reels, Clothes-line type, Spring drum, and 107, Reeling and unreeling, Reels, Spring drum type, and the subclasses thereunder, and 248, SUPPORTS, subclass 9, Adjustable, Vertical, Spring, and the subclass thereunder, for devices containing spring reels.
124—AIR-GUNS, CATAPULTS, AND TARGETS, subclasses 2, Catapults, Rubber-spring; 10, Guns, Air, Spring; 11, Guns, Air, Spring, Magazine; 12, Guns, Spring; 13, Guns, Spring, Magazine, and 14, Guns, Spring, Rubber, and 188, STORE SERVICE, subclass 10, Single impulse systems, Spring, and the subclass thereunder, for springs employed to propel by a single impulse.
38. SPRING, ESCAPEMENT-CONTROLLED. Spring motors which contain escapements.
Note.—See the note under subclass 5, Composite, Weight, Escapement controlled, and also the search notes thereunder.
39. SPRING, WINDING. Spring motors, including special winding features.
Note.—See the search notes under subclass 6, Composite, Weight, Winding, for mechanism for operating winding drums.
40. SPRING, WINDING, MOTOR. Miscellaneous spring motors which are wound by means of motors.
Note.—See the note under subclass 7, Composite, Weight, Winding, Motor, and also the search notes thereunder, for spring and weight motors which derive their energy from other motors.
41. SPRING, WINDING, MOTOR, MOMENTUM TYPE. Spring motors containing shafts rotating in one direction only, which alternately wind the springs and receive power therefrom, the connecting trains coming to rest after each alternation.
Note.—See the search notes under subclass 12, Composite, Spring, Winding, Motor, Momentum type.
42. SPRING, WINDING, MOTOR, FLUID. Spring motors in which the springs are wound by fluid motors.
Note.—See the search notes under subclass 8, Composite, Weight, Winding, Motor, Fluid, for spring and weight motors deriving their energy from fluid motors.
43. SPRING, WINDING, OVERWINDING-PREVENTERS. Devices for preventing overwinding the springs of spring motors.
Note.—See the search notes under subclass 13, Composite, Spring, Winding, Overwinding preventers, for overwinding preventers.
44. SPRING, WINDING, INDICATOR. Devices for indicating the degree to which the springs of spring motors are wound or for operating an indicator when the springs need winding.
Note.—See the search notes under subclass 14, Composite, Spring, Winding, Indicator, for winding indicators.
45. SPRING, SPRING-MOUNTING. Spring motors with special features relating to the mounting of the springs.
Search Classes—
58—HOROLOGY, subclasses 52, Clocks, Frames; 86, Watches, Barrels, and the subclass thereunder; 136, Safety-wheels, Barrel, and 137, Safety-wheels, Center, for the mounting of motor springs.
74—MACHINE ELEMENTS, subclass 68, Springs, for springs.
46. ESCAPEMENTS. Miscellaneous escapements not elsewhere classifiable.
Note.—See the note under subclass 5, Composite, Weight, Escapement controlled, and also the search notes thereunder.

CLASS 186.—STORE SERVICE.

DEFINITIONS.

Class.

This class is limited to apparatus for the transportation, usually of parcels or cash, within the limits of a building, the apparatus consisting of a track structure, usually elevated, upon which a carrier is propelled by power other than that of fluid pressure in a tube. The limitation is made that after the car leaves the sending terminal it is not again under direct manual control until it reaches the designated station. This distinguishes from the art shown in class 104, RAILWAYS, subclasses 181, Elevated, Suspended ways, and 180, Elevated, Suspended ways, Switches; 8, Inclined plane; 111, Pleasure railways; 110, Track curves, and 53, Traction, Running and carrying rope.

A general search should be made in the following classes and subclasses:

Class 17, BUTCHERING, subclass 30, Slaughtering, elevating and suspending, where a number of patents are found for devices similar to those shown in class 104, RAILWAYS, subclasses 181 and 180, above noted.

Class 22, METAL FOUNDRY, subclass 82, Casting apparatus, Metal holding and pouring, Ladles, Carriers and manipulators.

Class 104, RAILWAYS, subclasses 4, Elevated; 146, Elevated, Cable rail; 181, Elevated, Suspended ways; 180, Elevated, Suspended ways, Switches; 8, Inclined plane; 111, Pleasure railways; 110, Track curves, and 53, Traction, Running and carrying rope.

Class 187, ELEVATORS.

Class 191, ELECTRICITY, ELECTRIC RAILWAYS, subclass 22, Telfer and towing. This subclass contains a number of patents for telfer systems similar in operation to many shown in class 104, RAILWAYS, subclasses 4 and 146, above referred to, and to the subclass 7, Self-propelled car systems, in class 186, STORE SERVICE, now under consideration.

Class 214, LOADING AND UNLOADING, subclasses 14, Elevated carriers, and 2, Loading and unloading, Hay.

Class 243, PNEUMATIC DISPATCH, for transportation through tubes from station to station by fluid pressure.

In the definitions given below of the various subclasses it is understood that, with some exceptions in subclasses 1, Dining-room service; 17, Self-propelled car systems, and 18, Cable propulsion systems, Reciprocating, Drop car, the carriers are supported on a track along which they are propelled, either sliding, rolling, or upon wheels.

Subclasses.

1. DINING-ROOM SERVICE. Devices for carrying dishes containing food from the kitchen or place of preparation of the food to the dining room and returning the empty dishes. The manner of propulsion is unrestricted.

Search Class—

45—FURNITURE, subclass 26, Tables, Self-waiting.

2. GRAVITY SYSTEMS. Miscellaneous inventions not otherwise classifiable. The tracks are inclined, and the propelling force for the carriers is gravity.

Search Classes—

57—HOISTING, subclass 37, Chutes, and the subclasses thereunder.

104—RAILWAYS, subclasses 146, Elevated, Cable rail; 8, Inclined plane, and 111, Pleasure railways.

3. GRAVITY SYSTEMS, SELECTIVE DELIVERY. There are a number of terminals to which the cars are switched from the main line, the particular switch operated by a given carrier depending on its configuration or size.

Search Class—

186—STORE SERVICE, subclasses 15, Cable propulsion, Grip, Selective release, and 20, Switches, Selective, for other selective switching features.

4. GRAVITY SYSTEMS, TILTING TRACK. One end of the track is raised or lowered to give the necessary impelling force in the required direction.

Search Classes—

104—RAILWAYS, subclasses 146, Elevated, Cable rail; 8, Inclined plane, and 111, Pleasure railways.

214—LOADING AND UNLOADING, subclass 14, Elevated carriers.

5. GRAVITY SYSTEMS, TILTING TRACK, BOTH ENDS MOVABLE. Here each end of the track is raised and lowered.

Search Class—

186—STORE SERVICE, subclass 4, Gravity systems, Tilting track.

6. GRAVITY SYSTEMS, TILTING TRACK, BOTH ENDS MOVABLE, PIVOTED ARMS. The ends of the track are attached to pivoted arms, so that when one end of the track is raised the other is lowered.

7. SELF-PROPELLED CAR SYSTEMS. The propelling means is on the car in the form of a spring, electric, or other motor. In some cases the cars run on a closed track loop and distribute and collect selectively and automatically. In other cases the cars are switched selectively and automatically from the main line.

CLASS 186—Continued.

Search Classes—

186—STORE SERVICE, subclass 28, Carriers, Wheeled, Self-propelled.

104—RAILWAYS, subclasses 4, Elevated, and 146, Elevated, Cable rail.

191—ELECTRICITY, ELECTRIC RAILWAYS, subclass 22, Telfer and towing.

8. SINGLE IMPULSE SYSTEMS. The car is impelled by the hand either directly or by means of interposed mechanism.

Search Classes—

104—RAILWAYS, subclass 146, Elevated, Cable rail.

214—LOADING AND UNLOADING, subclass 14, Elevated carriers, and the subclasses thereunder.

9. SINGLE IMPULSE SYSTEMS, SPEED INCREASING. The car is impelled usually by hand, but with speed increasing means interposed between the power and the car.

10. SINGLE IMPULSE SYSTEMS, SPRING. The impelling means is a spring which is strained to the requisite point and then suddenly released to propel the car along the track.

Search Class—

124—AIR GUNS, CATAPULTS, AND TARGETS, subclasses 7, Bows and crossbows; 12, Guns, Spring, and the subclasses thereunder for spring straining and releasing mechanisms similar to those shown in this subclass.

11. SINGLE IMPULSE SYSTEMS, SPRING, LONGITUDINALLY MOVING LINE. The track itself or a line parallel to and coextensive with the track is an elastic cable or has springs inserted between its ends and the supports. The car is propelled from either end by pulling the line at that end and straining the elastic cable or the spring at the opposite end and quickly releasing, when the car is propelled through means of a projecting part on the line.

12. SINGLE IMPULSE SYSTEMS, GRAVITY. The end of the track upon which the car rests is tilted to give the necessary impulse to propel the car along the remainder of the track, which is not inclined. This subclass also includes cases in which the car rests on the level portion of the track, the car being impelled by a bunter running down the inclined portion of the track, which is tilted, and the bunter released at will.

13. SINGLE IMPULSE SYSTEMS, SPREADERS. The car is given an impulse by the spreading apart at one end of two members inserted between suitable parts on the car. In some cases both members are flexible, in other cases one is flexible and the other rigid, and one or both movable. In some cases one member forms the track on which the car runs and the other is coextensive with it, in other cases the second member extends for a limited distance only.

14. CABLE PROPULSION SYSTEMS. The car is propelled by a running cable or belt and runs on a track or is suspended on the cable or belt.

Search Classes—

104—RAILWAYS, subclasses 146, Elevated, Cable rail; 111, Pleasure railways, and 53, Traction, Running and carrying rope.

193—CONVEYERS, subclasses 2, Endless; 4, Endless, Belt, and 8, Endless, Flight.

214—LOADING AND UNLOADING, appropriate subclasses.

15. CABLE PROPULSION SYSTEMS, GRIP, SELECTIVE RELEASE. The carrier is propelled along a track by a continuously running cable, to which when the carrier is placed in the proper position it is automatically attached by means of a gripper on the carrier. The carrier runs to a designated station, when the gripper is automatically operated and the car switched to its terminal. The point of release and switching is determined by the configuration of the car.

Search Class—

104—RAILWAYS, subclasses 4, Elevated, and 146, Elevated, Cable rail; also in the various subclasses under 35, Grippers, especially in subclass 87, Grippers, Automatic release.

16. CABLE PROPULSION SYSTEMS, LOAD RELEASE. A belt or cable in the form of a closed loop propels a wheeled car or a flight usually along a track. A receptacle is carried by the car or pushed by the flight and is itself deposited at a previously selected point, or the contents of the receptacle are deposited at the given point.

Search Classes—

104—RAILWAYS, subclasses 4, Elevated, and 146, Elevated, Cable rail.

193—CONVEYERS, subclasses 2, Endless; 4, Endless, Belt, and 8, Endless, Flight.

17. CABLE PROPULSION SYSTEMS, RECIPROCATING. The carrier is attached to a cable and is propelled back and forth in the same path between the terminals. It may be propelled both ways by the cable or in one direction by the cable

CLASS 186—Continued.

and in the reverse by gravity. In some instances the carrier runs on a track, in others it is suspended from the propelling cable.

Search Classes—

- 66—LAUNDRY, subclass 3, Clothes lines, where analogous structures will be found.
- 104—RAILWAYS, subclasses 4, Elevated; 146, Elevated, Cable rail, and 53, Traction, Running and carrying rope.
- 214—LOADING AND UNLOADING.

18. CABLE PROPULSION SYSTEMS, RECIPROCATING, DROP CAR. Here the carrier is attached to the cable and is propelled back and forth in the same path. The car runs on a track or is suspended from the cable. Provision is made in some cases for lowering the carrier at the term nals. In other instances it is lowered at any intermediate point.

Search Class—

- 214—LOADING AND UNLOADING, subclasses 14, Elevated carriers, and 19, Elevated carriers, Rope catch.

19. SWITCHES. Devices not otherwise classified for directing a carrier from one track to another over an intervening movable track section.

Search Class—

- 104—RAILWAYS, subclasses 180, Elevated, Suspended ways, Switches, and 12, Switches, and the subclasses thereunder.

20. SWITCHES, SELECTIVE. Mechanisms by which the carrier is directed to a particular branch along a track, the point of switching depending upon the configuration or size of the carrier. In some cases the switch is movable, in others immovable.

Search Class—

- 186—STORE SERVICE, subclasses 3, Gravity systems, Selective delivery; 13, Single impulse systems, Spreaders, and 15, Cable propulsion systems, Grip, Selective release.

21. SWITCHES, SELECTIVE, CARRIER RETURNED. The carrier is switched to a particular point, depending upon the size or configuration of the carrier, the switch being returned to its original position by action of the carrier after passing.

22. ELEVATORS AND DROPS. Devices for hoisting or lowering a carrier from one level to another. In some cases the devices operate between tracks at different levels, in others between a station and a track at another level.

Note.—A large number of these devices are shown in this class, subclasses, 2, Gravity systems; 3, Gravity systems, Selective delivery, and 8, Single impulse car systems, and the subclasses thereunder.

Search Classes—

- 17—BUTCHERING, subclass 30, Slaughtering, elevating, and suspending.
- 89—ORDNANCE, subclass 46, Loading, Hoisting apparatus.
- 193—CONVEYERS, subclass 8, Endless, Flight.
- 214—LOADING AND UNLOADING, appropriate subclasses.
- 227—FIRE-ESCAPES, subclass 10, Endless carriers.

23. ELEVATORS AND DROPS, SPEED CONTROLLED DROP. Devices for hoisting or lowering a carrier from one level to another, connected with which are means for controlling the speed of the falling carrier.

Search Classes—

- 186—STORE SERVICE, subclass 29, Carriers, Wheeled, Drop receptacle.
- 57, HOISTING, subclass 37, Chutes, and subclasses thereunder, for drops of widely varying character.
- 187—ELEVATORS, subclasses 38, Control mechanism, Speed controlled; 68, Fluid governors and subclasses thereunder; and 73, Car-brakes and catches, and appropriate subclasses thereunder.
- 227—FIRE ESCAPES, subclasses 1, Automatic speed governors, and 34, Automatic speed governors, Centrifugal.

24. BUFFERS. Devices for receiving the impact of the carrier as it reaches the end of the line.

CLASS 186—Continued.

Search Classes—

- 16—BUILDERS' HARDWARE, subclass 6, Door checks, and the subclasses thereunder.
- 104—RAILWAYS, subclass 49, Buffers.
- 187—ELEVATORS, subclass 67, Well-end cushions.
- 214—LOADING AND UNLOADING.

25. BUFFERS, SLIDE. The retarding action is produced by the carrier sliding on the buffer, which is in the form of an inclined plane. In some cases the buffer is a wedge embraced by parts on a car.

26. CARRIERS. Miscellaneous cash and parcel carriers not otherwise classified.

27. CARRIERS, WHEELED. Carriers running on wheels adapted to the service indicated in the general definition of this class and not specifically included in the remaining carrier subclasses.

Search Classes—

- 104—RAILWAYS, subclasses 4, Elevated; 146, Elevated, Cable rail, and 181, Elevated, Suspended ways.
- 105—RAILWAY ROLLING STOCK, subclasses 233, Single rail, and the subclasses thereunder; 236, Single top and bottom rail, and 237, Suspended.

28. CARRIERS, WHEELED, SELF-PROPELLED. Wheeled carriers propelled by a self-contained motor of any form.

Search Classes—

- 186—STORE SERVICE, subclass 7, Self-propelled car systems.
- 104—RAILWAYS, subclasses, 4, Elevated, and 146, Elevated, Cable rail.
- 105—RAILWAY ROLLING STOCK, subclass 237, Suspended.
- 191—ELECTRICITY, ELECTRIC RAILWAYS, subclass 22, Telfer and towing.
- 247—ELECTRICITY, CONDUITS, subclass 25, Wire drawing, Motors.

29. CARRIERS, WHEELED, DROP RECEPTACLES. Wheeled carriers in which the cash or parcel receptacle is lowered from its normal position while still remaining attached to the car. In some instances the car remains attached to some part of the structure.

Search Classes—

- 186—STORE SERVICE, subclasses 18, Cable propulsion systems, Reciprocating, Drop car; 22, Elevators and drops, and 23, Elevators and drops, Speed controlled drop.
- 214—LOADING AND UNLOADING, generally.

30. CARRIERS, WHEELED, DERAILMENT GUARDS. Devices for preventing derailment of wheeled carriers.

Search Class—

- 105—RAILWAY ROLLING STOCK, subclasses 215, Derailment guards, Inclined wheels; 95, Derailment guards, Rail interlocking, and 96, Derailment guards, Supplemental wheels.

31. CARRIERS, ROLLING. Carriers of spherical, cylindrical, and other permissible shapes which roll along the track.

32. CARRIERS, SLIDING. The carriers slide along the track. The method of propulsion is unrestricted.

Search Class—

- 186—STORE SERVICE, subclass 15, Cable propulsion systems, Grip, Selective release.

33. DETAILS. Elementary parts of cash carrier systems and their accessories not otherwise classifiable.

34. DETAILS, TRACK. Track accessories and elementary parts not otherwise classifiable.

Search Classes—

- 104—RAILWAYS, subclasses 4, Elevated; 146, Elevated, Cable rail; 181, Elevated, suspended ways; 180, Elevated, Suspended ways, Switches, and 83, Traction, Curves, for details of tracks of the character here under consideration.
- 214—LOADING AND UNLOADING, subclass 14, Elevated carriers, and the subclasses thereunder.

CLASS 187.—ELEVATORS.

DEFINITIONS.

Class.

This class includes elevators of the type comprising a traveling car, cage, platform, or similar device upon which a load is to be placed, also certain door mechanism and other details of elevator structure not provided for elsewhere.

Elevators in which the load-carrying device travels in a continuous path are classified here if the motor mechanism is controllable from along the path of travel, so as to stop the carrier at any desired elevation.

Elevators limited to use in connection with means for automatically taking up or discharging the load are excluded.

In general combinations of elevators with other apparatus or elevator structures especially modified for use in certain arts are classified with such apparatus or arts.

Elevator signals are classified in appropriate subclasses under classes 116, SIGNALS; 177, ELECTRIC SIGNALING, and 178, TELEGRAPHY.

Patents containing matter falling within two or more subclasses have been placed in the subclass having the lowest number and cross-referenced, if necessary, to other subclasses.

Subclasses.

1. MISCELLANEOUS. Elevators and details thereof not classifiable elsewhere.

Search Classes—

14—BRIDGES, subclass 42, Draw, Lift.

46—GAMES AND TOYS, subclass 72, Amusement elevators, for elevator structures in which the car has a rotary movement or which are otherwise modified to adapt them especially for use as amusement devices.

62—REFRIGERATION, subclass 10, Refrigerators, for combinations of elevators and refrigerator structure.

89—ORDNANCE, subclass 46, Loading, Hoisting apparatus.

189—METALLIC BUILDING STRUCTURES, subclass 14, Skeleton towers, Arrangement, Elevating.

193—CONVEYERS, appropriate subclasses under "Endless," for load-carrying devices traveling in a continuous path.

214—LOADING AND UNLOADING, appropriate subclasses, and subclass 12, Loading and unloading, Vertical hoist and dump, for wagon jacks used to raise one end of a wagon for the purpose of dumping the load.

220—METALLIC SHIPPING AND STORING VESSELS, subclass 116, Receptacles, Garbage, Hoisting.

2. BUILDING MATERIAL. Elevators designed for hoisting materials during the erection of buildings. The structure is especially adapted for easy erection, extension, and removal.

Search Classes—

187—ELEVATORS, subclass 9, Portable, and the subclasses thereunder, for elevators which are portable as a whole.

20—WOODEN BUILDINGS, subclass 81, Scaffolds, Miscellaneous.

193—CONVEYERS, subclasses 2, Endless, and 8, Endless, Flight, for hod elevators and the like, which include conveying means traveling in a continuous path.

3. DUMB-WAITER TYPE. Dumb-waiters and similar elevators of light construction not adapted for carrying passengers, and therefore involving no control means operable from the car. Some of the patents are for so-called "refrigerators," used for lowering provisions into an underground chamber, as a well.

Search Classes—

62—REFRIGERATION, subclass 10, Refrigerators, for elevators in combination with specific refrigerator structure, such as heat insulation, ice-receptacles, or structures adapted for submergence in a cooling liquid.

186—STORE SERVICE, subclass 22, Elevators and drops.

211—STORE FURNITURE, subclass 27, Shelving.

220—METALLIC SHIPPING AND STORING VESSELS, subclass 116, Receptacles, Garbage, Hoisting.

4. DUMB-WAITER TYPE, MAIL. Elevators especially designed for conveying mail to or from the upper stories of buildings.

Search Class—

214—LOADING AND UNLOADING, subclass 12, Loading and unloading, Vertical hoist and dump, for mail elevators, including means for discharging the mail at the desired points.

5. DUMB-WAITER TYPE, LOCKED CAR. Dumb-waiter elevators, including means for locking or holding the car, usually in its lowered position.

Search Class—

187—ELEVATORS, subclass 73, Car brakes and catches, and the subclasses thereunder, for locking means adapted to support the car above its lower limit of travel.

6. EXTERIOR WALL. Elevators supported upon the exterior walls of buildings, the car being limited to travel up and down the face of the building by permanent ways connected to the wall. Such elevators are usually intended for use as fire-escapes.

CLASS 187—Continued.

Search Class—

227—FIRE-ESCAPES, appropriate subclasses, for permanent fire-escape elevators supported upon building exteriors but not included under the above definition.

7. EXTERIOR WALL, LATERAL MOVEMENT. Exterior wall elevators in which the car has lateral movement relative to the guides or the guides themselves are mounted to move laterally on the wall of the building.

Search Classes—

187—ELEVATORS, subclass 9, Portable, and the subclasses thereunder, for laterally movable guides.

227—FIRE-ESCAPES, subclass 14, Hoist-rope-supporting trolley.

8. EXTERIOR WALL, CAR BRAKE. Includes a brake or catch on the car adapted to support the car or retard its movement by engagement with adjacent relatively fixed elements.

Search Classes—

187—ELEVATORS, subclass 80, Car brakes and catches, Car-supported, and appropriate subclasses thereunder.

227—FIRE-ESCAPES, subclasses under the title "Rope brakes."

9. PORTABLE. Elevators so constructed as to be readily portable as a whole.

Vehicles, as baggage trucks and the like, in which the entire bed or platform is arranged to be raised and lowered vertically are classified here if the platform is operated by hoisting means associated with a superstructure. Elevators merely attached to conventional vehicles for loading or unloading the vehicle are also placed here.

Search Classes—

187—ELEVATORS, subclass 7, Exterior wall, Lateral movement, for trolley-supported elevator guides.

20—WOODEN BUILDINGS, subclass 81, Scaffolds, Miscellaneous, for portable elevators involving features especially adapting them for use as scaffolds.

21—CARRIAGES AND WAGONS, subclass 118, Trucks, Elevating, for similar structures in which the hoisting means is not associated with a superstructure, also for trucks, as stove and brick trucks, having vertical adjustment merely for taking up or depositing the load.

33—MILLS, subclass 26, Bagging grain, Bag holders, for bag elevators, including means for holding the bag.

169—FIRE-EXTINGUISHERS, subclass 18, Portable, Water towers; 189, METALLIC BUILDING STRUCTURES, subclass 11, Portable towers, and 227, FIRE-ESCAPES, subclass 20, Portable spars and towers, for extensible towers other than lazy tongs structures having a load-carrier raised and lowered simultaneously with the tower.

214—LOADING AND UNLOADING, subclass 1, Loading and unloading, for vehicles provided with elevators for raising and lowering loads to and from the level of the vehicle floor and involving modification of the vehicle structure; also subclasses 12, Loading and unloading, Vertical hoist and dump, for trolley-supported store elevators involving means for taking up or depositing the load, also for portable elevators for lifting one end of a wagon for dumping the load, and 17, Elevated carriers, Non-lowering support, and 227, FIRE-ESCAPES, subclass 14, Hoist-rope-supporting trolley, for similar structures suspended from a trolley, but not including guides to direct the vertical travel of the car.

227—FIRE-ESCAPES, subclass 15, Lazy tongs, and subclasses thereunder, for portable lazy tongs elevators involving any feature adapting them specially for use as fire-escapes.

10. PORTABLE, INCLINED. Portable elevators in which the car travels in an inclined path.

Search Classes—

57—HOISTING, subclass 18, Skids, for similar structures involving automatic discharge of the load.

214—LOADING AND UNLOADING, appropriate subclasses.

11. PORTABLE, WINDING DRUM. Portable elevators in which the car is raised and lowered by a cable attached to a winding drum.

Search Class—

187—ELEVATORS, subclass 10, Portable, Inclined.

12. INCLINED. Elevators comprising an inclined track and a car specially adapted to travel thereon. Structures of the inclined railway type are excluded unless the car is limited to travel on the inclined track, also inclined railways designed to be traversed by locomotives or motor cars and rolling stock therefor.

Search Classes—

187—ELEVATORS, subclass 10, Portable, Inclined.

104—RAILWAYS, subclasses 8, Inclined plane; 113, Inclined plane, Traction; 111, Pleasure railways, and 165, Endless-carrier.

105—RAILWAY ROLLING STOCK, subclass 228, Locomotives, Rack-rail.

214—LOADING AND UNLOADING, appropriate subclasses.

227—FIRE-ESCAPES, appropriate subclasses.

CLASS 187—Continued.

13. **INCLINED, CABLE-CONTROLLED BRAKES.** Inclined elevators, including a brake or catch device for the car controlled by the tension on a hoisting cable.

Search Classes—

- 187—ELEVATORS, subclass 81, Car brakes and catches, Car-supported, Cable-controlled, and appropriate subclasses thereunder.
188—RAILWAY BRAKES, subclass 76, Safety catches.
14. **INCLINED, CABLE-CONTROLLED BRAKES, RAILGRIPPING.** Inclined elevators having cable-controlled brake devices arranged to grip a fixed rail.

Search Classes—

- 187—ELEVATORS, subclass 81, Car brakes and catches, Car-supported, Cable-controlled, and appropriate subclasses thereunder.
188—RAILWAY BRAKES, subclasses 48, Rail, Grippers, and 74, Rail, Grippers, Automatic.

15. **SHIFTABLE WEIGHT.** Elevators that include means for varying the ratio between the weights of car and counterbalance by adding material to or removing it from the car or counterbalance.

16. **SUPERPOSED CARS.** Elevators, including a plurality of cars arranged one above another in the same shaft.

Search Classes—

- 104—RAILWAYS, subclass 165, Endless-carrier, and 193, CONVEYERS, subclasses 2, Endless, and 8, Endless, Flight, for similar structures in which the motor mechanism is not controllable from along the path of the carriers to stop the carriers at any desired elevation.
227—FIRE-ESCAPES, subclass 10, Endless-carriers.

17. **MOTOR MECHANISM.** Improvements in the mechanism for causing the car to travel in opposition to the action of gravity upon the car and counterbalance.

Note.—Driving or hoisting mechanism not limited to use in connection with an elevator car is excluded. In hydraulic or analogous fluid pressure motor mechanism for elevators the recital of a car or of control devices on or operable from the car when such features are merely conventional has not been deemed sufficient to bring the patent to this class.

Search Classes—

- 5—BEDS, subclass 45, Bedsteads, Invalid, Vertically-moving frame.
16—BUILDERS' HARDWARE, subclass 53, Sash fasteners, Lifts.
20—WOODEN BUILDINGS, subclass 81, Scaffolds, Miscellaneous.
21—CARRIAGES AND WAGONS, subclass 118, Trucks, Elevating.
57—HOISTING, appropriate subclasses, especially 129, Hoisting gear; 22, Capstans and windlasses, and the subclasses thereunder, and 15, Lifting jacks, and the subclasses thereunder.
61—HYDRAULIC ENGINEERING, subclass 48, Docks, Lifting.
74—MACHINE ELEMENTS, appropriate subclasses.
104—RAILWAYS, subclass 64, Truck-changers.
138—HYDRAULIC MOTORS, subclass 8, For elevators, and the subclasses thereunder.

18. **MOTOR MECHANISM, LAZY TONGS.** Elevator motor mechanism wherein the car is supported upon and raised and lowered by lazy tongs levers.

Search Classes—

- 14—BRIDGES, subclass 45, Draw, Lazy tongs.
57—HOISTING, subclass 129, Hoisting gear, for lazy tongs hoisting gear not limited to use in connection with an elevator car or platform.
74—MACHINE ELEMENTS, subclass 5, Cranks and levers.
227—FIRE-ESCAPES, subclass 15, Lazy tongs, and the subclasses thereunder, for lazy tongs elevators, including extensible bridges or means for inclining the structure for reaching windows or other features especially adapting them for use as fire-escapes.

19. **MOTOR MECHANISM, RACK AND PINION.** Elevator motor mechanism wherein the car is driven by rack and pinion gearing one of the elements of which is mounted upon the car and the other upon the shaft or guide structure.

Search Classes—

- 57—HOISTING, subclass 102, Lifting jacks, Rack and pinion.
74—MACHINE ELEMENTS, subclass 27, Racks and pinions.
105—RAILWAY ROLLING STOCK, subclass 228, Locomotives, Rack-rail.
239—RAILWAY RAILS AND JOINTS, subclass 19, Rails, Rack.

20. **MOTOR MECHANISM, ROPE-DRIVE.** Elevator motor mechanism wherein the car is supported by flexible means, as cables, which are caused to travel relatively to a driving drum or sheave by frictional contact therewith.

Search Classes—

- 57—HOISTING, subclass 22, Capstans and windlasses, and the subclasses thereunder.
74—MACHINE ELEMENTS, subclass 21, Gearing, Belt.

21. **MOTOR MECHANISM, ROPE-DRIVE, HAND-ROPE OPERATED.** Rope-drive elevator motor mechanism wherein the driving sheave or drum is driven by means of a hand-rope extending along the path of travel of the car.

Search Class—

- 57—HOISTING, subclasses 5, Block and tackle, Differential pulleys, and 22, Capstans and windlasses.

22. **MOTOR MECHANISM, ROPE-DRIVE, TENSIONING FEATURE.** Rope-drive elevator motor mechanism, including means other than a traveling weight for maintaining sufficient tension in the flexible driving means to prevent slipping on the driving sheave or drum.

CLASS 187—Continued.

Search Class—

- 64—JOURNAL BOXES, PULLEYS, AND SHAFTING, subclasses 5, Belt tighteners, and 52, Journal boxes, Bodily movable, for tensioning means for driving belts or cables.

23. **MOTOR MECHANISM, ROPE-DRIVE, DIFFERENTIAL SHEAVE.** Rope-drive elevator motor mechanism wherein the flexible supporting means passes around a plurality of sheaves of different sizes or rotatable at different velocities.

24. **MOTOR MECHANISM, SCREW.** Elevator motor mechanism wherein the car is driven by screw gearing one of the elements of which is mounted upon the car and the other upon the shaft or guide structure.

Search Classes—

- 46—GAMES AND TOYS, subclass 72, Amusement elevators, for cars which are raised or lowered by the rotation of the car itself in engagement with a stationary screw.
57—HOISTING, subclass 44, Lifting jacks, Screw.
74—MACHINE ELEMENTS, subclass 40, Gearing, Screw-and-nut.

25. **MOTOR MECHANISM, SCREW, TRAVELING ROTARY ELEMENT.** Screw motor mechanism wherein the rotary element of the screw gearing is attached to and travels with the car.

26. **MOTOR MECHANISM, TRAVELING SHEAVE.** Elevator motor mechanism wherein the car is driven by a cable, an intermediate portion of which passes around one or more traveling or multiplying sheaves.

Search Classes—

- 57—HOISTING, subclass 129, Hoisting gear.
138—HYDRAULIC MOTORS, subclass 8, For elevators, for similar structure in connection with hydraulic motors.

27. **MOTOR MECHANISM, WINDING DRUM.** Elevator motor mechanism wherein the car is driven by a cable or the like attached to and winding upon a hoisting drum.

Search Classes—

- 187—ELEVATORS, subclasses 10, Portable, Inclined, and 11, Portable, Winding drum.
57—HOISTING, subclass 22, Capstans and windlasses, and the subclasses thereunder.
242—WINDING AND REELING, subclass 117, Winding drums and sand reels, for drum structure *per se*.

28. **CONTROL MECHANISM.** Apparatus for controlling the elevator motor mechanism, guide sheaves, or cables and limited to use in elevators of the type falling in this class.

Note.—The control may be by means of a brake applied to some part of the motor apparatus, including the cable and sheaves, or by means of a clutch, switch, valve, or other power controlling device.

Note.—Control mechanism for hydraulic elevator motors is not classified here unless it goes beyond the recital of a conventional control rope or the like.

Note.—Brake apparatus *per se* disclosed in connection with elevators has not been cross-referenced to the subclasses under "Control mechanism" unless limited to use in connection with an elevator car. The mere operation by a hand rope has not been considered as so limiting it.

Search Classes—

- 187—ELEVATORS, subclass 68, Fluid governors, for speed controlling pumps, plungers, and the like.
57—HOISTING, appropriate subclasses, for hoisting motor control mechanism not limited to use in connection with an elevator car.
74—MACHINE ELEMENTS, subclass 13, Machine brakes, and the subclasses thereunder, for brake apparatus *per se* not limited to use in connection with an elevator car.
138—HYDRAULIC MOTORS, subclass 8, For elevators, and the subclasses thereunder, for hydraulic motor control mechanism not limited to use in connection with an elevator car.

29. **CONTROL MECHANISM, ELECTRIC.** Miscellaneous control mechanism involving electric features.

Note.—Electric switches and controllers of general application, whether operable manually or automatically, are excluded from this class, also manually operable electrical control systems for the normal control of elevator motors. Such systems may include the car, manually operable electric controllers on the car or landings, and switches controlled by the position of the car or doors. Further limitations to use in connection with an elevator car bring the mechanism within the scope of this class.

Search Class—

- 172—ELECTRICITY, MOTIVE POWER, subclasses 152, Elevators, and 179, Motors, Hand operating devices, for electrical elevator control devices and systems excluded from this class.

30. **CONTROL MECHANISM, DOOR-ACTUATED.** Control mechanism actuated by the movement of elevator doors or locks thereof independently of the movement of the car itself.

Search Class—

- 187—ELEVATORS, subclass 47, Control mechanism, Controller locks, Door-actuated, and the subclasses thereunder, for standing rope controllers which are locked to the car by the opening of the door, so that movement of the car causes corresponding movement of the controller.

31. **CONTROL MECHANISM, DOOR-ACTUATED, ELECTRIC.** Door-actuated control mechanism involving electric features.

Search Classes—

- 172—ELECTRICITY, MOTIVE POWER, subclass 152, Elevators, for manually operable electric control systems, including door switches.

CLASS 187—Continued.

- 177—ELECTRIC SIGNALING, subclasses 10, Circuit closers, and 203, Circuit closers, Lock, for door actuated circuit closers *per se*.
32. CONTROL MECHANISM, LANDING STOPS. Control mechanism, including means which may be set to cause the car to be stopped upon reaching the next or any desired landing.
- Search Class—**
172—ELECTRICITY, MOTIVE POWER, subclass 152, Elevators, for electrical control systems, including floor or landing switches.
33. CONTROL MECHANISM, LANDING STOPS, LOCK. Landing stop mechanism acting to lock the control cable to the car to prevent actuation from a point remote from the car.
34. CONTROL MECHANISM, LIMIT. Control mechanism, including means for automatically retarding and stopping or reversing the motor mechanism when the car approaches the limit of travel.
- Search Classes—**
187—ELEVATORS, subclass 32, Control mechanism, Landing stops.
57—HOISTING, subclass 130, Capstans and windlasses, Automatic stop, and 138, HYDRAULIC MOTORS, subclass 8, For elevators, and the subclasses thereunder, for limit stops contained in the motor mechanism.
35. CONTROL MECHANISM, LIMIT, ELECTRIC. Limit control mechanism, including electric features.
- Search Class—**
172—ELECTRICITY, MOTIVE POWER, subclass 152, Elevators, for manually operable electrical control systems, including limit switches.
36. CONTROL MECHANISM, LIMIT, CARRIER-ACTUATED. Limit control mechanism arranged to be actuated by the car or counterweight.
- Search Classes—**
187—ELEVATORS, subclass 35, Control mechanism, Limit, Electric.
103—PUMPS, subclass 35, Windlass water-elevator, for reversing devices actuated by the bucket or by buttons on the hoist rope.
214—LOADING AND UNLOADING, subclass 12, Loading and unloading, Vertical hoist and dump, for similar structure in connection with wagon jacks.
37. CONTROL MECHANISM, LIMIT, CARRIER-ACTUATED, DEFLECTED ROPE. Limit control mechanism, including a cable in the path of the car or counterweight, which is deflected as the car reaches the limits of travel.
38. CONTROL MECHANISM, SPEED CONTROLLED. Control mechanism the operation of which is dependent upon the speed of the car.
- Search Classes—**
57—HOISTING, subclass 130, Capstans and windlasses, Automatic stop.
74—MACHINE ELEMENTS, subclass 45, Machine brakes, Centrifugal speed regulators, for speed controlled brakes.
186—STORE SERVICE, subclass 23, Elevators and drops, Speed-controlled drop.
227—FIRE-ESCAPES, subclass 1, Automatic speed governors, and the subclasses thereunder.
39. CONTROL MECHANISM, SPEED CONTROLLED, ELECTRIC. Speed actuated control mechanism involving electric features.
40. CONTROL MECHANISM, WELL-OBSTRUCTION. Control mechanism which comes into action when some object projects into the well from the car or from a landing, so as to obstruct the free passage of the car.
41. CONTROL MECHANISM, WELL-OBSTRUCTION, ELECTRIC. Well-obstruction control mechanism involving electric features.
42. CONTROL MECHANISM, OPERATOR-ACTUATED. Improvements in control devices relating specially to actuation by the operator and limited to use in connection with an elevator car.
- Search Classes—**
187—ELEVATORS, subclasses 32, Control mechanism, Landing stops, and 33, Control mechanism, Landing stops, Lock.
74—MACHINE ELEMENTS, subclass 39, Cranks and levers, Hand-levers, for hand levers *per se*.
43. CONTROL MECHANISM, OPERATOR - ACTUATED, ELECTRIC. Operator-actuated control mechanism involving electric features and including structure limited to use in connection with an elevator car.
- Search Class—**
172—ELECTRICITY, MOTIVE POWER, subclasses 152, Elevators, for electric control systems for the normal control of elevator motors, including manually operable electric control devices, and 179, Motors, Hand operating devices, for electric controllers *per se*.
44. CONTROL MECHANISM, OPERATOR - ACTUATED, ROPE-CONTROLLERS. Improvements in the arrangement or mounting of controller-ropes and the manually operable means for actuating them.
- Search Class—**
187—ELEVATORS, subclasses 32, Control mechanism, Landing stops, and 33, Control mechanism, Landing stops, Lock, for devices which may be set to cause the automatic actuation of the controller-rope as the car approaches a landing.

CLASS 187—Continued.

45. CONTROL MECHANISM, OPERATOR - ACTUATED, ROPE CONTROLLERS, RUNNING ROPE. Controllers of the "running rope" type, including a cable traveling with the car or at a rate proportional to that of the car.
46. CONTROL MECHANISM, CONTROLLER-LOCKS. Restraining means, as a lock or guard, to prevent manipulation of the controller.
- Note.**—When the controller is of the standing rope type and the lock is on the car, the locking of the rope to the car will cause the actuation of the controller should the car move.
- Search Classes—**
187—ELEVATORS, subclass 33, Control mechanism, Landing stops, Lock.
24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 115, Cord and rope holders, and the subclasses thereunder, for rope holders *per se*.
47. CONTROL MECHANISM, CONTROLLER-LOCKS, DOOR-ACTUATED. Controller-locks actuated upon the opening of an elevator door to prevent manipulation of the controller while the door is open.
48. CONTROL MECHANISM, CONTROLLER-LOCKS, DOOR-ACTUATED, ELECTRIC. Door-actuated controller-locking mechanism involving electric features.
- Search Classes—**
172—ELECTRICITY, MOTIVE POWER, subclass 152, Elevators, for electric control systems, including door-actuated switches.
177—ELECTRIC SIGNALING, subclasses 10, Circuit-closers, and 203, Circuit-closers, Lock, for door-actuated circuit closers *per se*.
49. CONTROL MECHANISM, CONTROLLER-LOCKS, DOOR-ACTUATED, LOCKED DOOR. Controller locking mechanism, including means to prevent the opening of the door under improper conditions, as when the car is not at the landing or when the controller is not in stop position.
- Search Class—**
187—ELEVATORS, subclass 61, Door mechanism, Locks, for elevator door locks *per se*.
50. CONTROL MECHANISM, CONTROLLER-LOCKS, DOOR-ACTUATED, LOCKED DOOR, ELECTRIC. Door-actuated controller-locks of the locked door type involving electric features.
51. DOOR MECHANISM. Opening, closing, or fastening mechanism for elevator gates or doors having particular cooperation with the elevator car.
- Note.**—Patents in which the claims do not recite the car or parts thereon have been placed here if an element is recited which is designed to be directly actuated by the car or parts thereon.
- Search Classes—**
187—ELEVATORS, subclass 62, Hatch mechanism, and the subclasses thereunder, for similar structure in connection with closures extending across the elevator well.
14—BRIDGES, subclass 50, Draw, Gates, and the subclasses thereunder.
20—WOODEN BUILDINGS, subclasses under "Doors," for door structure *per se*.
39—FENCES, subclasses under "Gates, Openers," for door opening mechanism generally.
183—METALLIC BUILDING STRUCTURES, subclass 46, Doors, and the subclasses thereunder, for metallic door structure.
52. DOOR MECHANISM, MOTOR ACTUATED. Door mechanism wherein the door is actuated by a motor and not directly by the car.
- Search Classes—**
14—BRIDGES, subclasses under "Draw, Gates, Hand or motor operated."
39—FENCES, appropriate subclasses under "Gates, Openers."
53. DOOR MECHANISM, MOTOR ACTUATED, COMMON MOTOR SHAFT. Motor operated door mechanism actuated by a rotating vertical shaft extending through the various floors.
54. DOOR MECHANISM, MOTOR ACTUATED, SEPARATE MOTORS. Door mechanism wherein a separate motor is used to operate the door at each landing.
55. DOOR MECHANISM, FLEXIBLE SCREENS. Door mechanism comprising a flexible screen or curtain extending past a plurality of doorways.
56. DOOR MECHANISM, SLIDING DOORS. Door mechanism comprising closures mounted to slide.
- Search Class—**
187—ELEVATORS, subclass 52, Door mechanism, Motor-actuated, and the subclasses thereunder.
57. DOOR MECHANISM, SLIDING DOORS, LOCKED DOOR. Sliding door mechanism, including means in addition to the door moving devices *per se* for locking the door in open or closed position.
- Search Class—**
187. ELEVATORS, subclass 61, Door mechanism, Locks, for elevator door locks *per se*.
58. DOOR MECHANISM, SLIDING DOORS, VERTICAL MOVEMENT. Door mechanism comprising closures mounted to slide vertically.
- Search Class—**
187—ELEVATORS, subclass 55, Door mechanism, Flexible screens.

CLASS 187—Continued.

59. **DOOR MECHANISM, SLIDING DOORS, VERTICAL MOVEMENT, LOCKED DOOR.** Door mechanism with vertically sliding doors, including means in addition to the door moving devices *per se* for locking the door in open or closed position.
- Search Class—**
187—ELEVATORS, subclass 61, Door mechanism, Locks, for elevator door locks *per se*.
60. **DOOR MECHANISM, SLIDING DOORS, VERTICAL MOVEMENT, SLIDING COUPLER.** Door mechanism with vertically sliding doors, including a sliding block or the like suitably connected to the door and adapted to be moved up or down by engagement with a part on the car.
- Search Class—**
187—ELEVATORS, subclass 64, Hatch mechanism, Sliding coupler.
61. **DOOR MECHANISM, LOCKS.** Mechanism for fastening an elevator door in closed position and having particular coöperation with the elevator car.
- Search Classes—**
187—ELEVATORS, subclasses 31, Control mechanism, Door-actuated, Electric; 49, Control mechanism, Controller locks, Door-actuated, Locked door; 50, Control mechanism, Controller locks, Door-actuated, Locked door, Electric; 57, Door mechanism, Sliding doors, Locked door, and 59, Door mechanism, Sliding doors, Vertical movement, Locked door.
14—BRIDGES, the subclasses under "Draw, Gates," which include the title "Locking."
70—LOCKS AND LATCHES, for lock structure generally.
62. **HATCH MECHANISM.** Opening, closing, or fastening mechanism for hatches in an elevator well and having particular coöperation with the elevator car.
- Search Classes—**
20—WOODEN BUILDINGS, subclasses under "Doors," 94, PAVING, subclass 7, Vault covers, and 189, METALLIC BUILDING STRUCTURES, subclass 46, Doors, and the subclasses thereunder, for hatch structure generally.
39—FENCES, subclass 96, Gates, Openers, Haich, for hatch openers generally.
63. **HATCH MECHANISM, LEVER OPENER.** Hatch opening mechanism, including a horizontally pivoted lever with which the car engages in its downward travel.
- Note.**—In the upward travel of the car the hatch may be opened by direct contact with the car.
64. **HATCH MECHANISM, SLIDING COUPLER.** Hatch opening mechanism, including a slidable block or the like suitably connected to the hatch and arranged to be moved up or down by contact with a part on the car.
- Note.**—In the upward travel of the car the hatch may be opened by direct contact with the car.
- Search Class—**
187—ELEVATORS, subclass 60, Door mechanism, Sliding doors, Vertical movement, Sliding coupler.
65. **HATCH MECHANISM, DIRECT CONTACT.** Hatch mechanism wherein the car comes into direct contact with the hatch to open it in both directions of travel.
- Search Class—**
187—ELEVATORS, subclasses 62, Hatch mechanism; 63, Hatch mechanism, Lever opener, and 64, Hatch mechanism, Sliding coupler, for hatches opened by direct contact with the car in its upward movement only.
66. **HATCH MECHANISM, VERTICALLY SLIDABLE HATCH.** Hatch mechanism, including hatches arranged to slide vertically in the well and either raised or lowered, or both, by the car.
67. **WELL-END CUSHIONS.** Mechanism comprising springs, fluid cushions, or analogous means for cushioning the car or counterweight adjacent the top or bottom of the well.
- Search Classes—**
187—ELEVATORS, subclass 68, Fluid governors, and the subclasses thereunder, for analogous devices operative throughout the path of travel.
74—MACHINE ELEMENTS, subclass 69, Machine-brakes, Dash-pots.
101—PRINTING, subclass 5, Bed-and-cylinder machines, Cushions.
104—RAILWAYS, subclass 49, Buffers.
138—HYDRAULIC MOTORS, subclass 8, For elevators, and the subclasses thereunder, for cushions forming part of the motor mechanism.
186—STORE SERVICE, subclasses 24, Buffers, and 25, Buffers, Slide.
213—RAILWAY DRAFT APPLIANCES, subclasses 39, Buffers, and 2, Buffers, Fluid pressure.
227—FIRE-ESCAPES, subclass 6, Body catchers.
68. **FLUID GOVERNORS.** Elevator controlling mechanism comprising pumps or analogous devices operating against the resistance of a confined fluid.
- Search Classes—**
187—ELEVATORS, subclass 67, Well-end cushions, for similar structure operating to retard the car adjacent the ends of its travel only.
57—HOISTING, subclass 22, Capstans and windlasses, and 74, MACHINE ELEMENTS, subclass 69, Machine-brakes, Dash-pots, for fluid governors not limited to use in connection with an elevator car.
138—HYDRAULIC MOTORS, subclass 8, For elevators, and the subclasses thereunder.

CLASS 187—Continued.

- 227—FIRE-ESCAPES, subclass 4, Automatic speed-governors, Fluid check.
69. **FLUID GOVERNORS, CAR-SUPPORTED PUMP.** Fluid governors comprising a pump structure carried upon the car and driven by the movement of the car.
- Search Class—**
227—FIRE-ESCAPES, subclass 4, Automatic speed-governors, Fluid check.
70. **FLUID GOVERNORS, COUNTERWEIGHT.** Fluid governors for elevators wherein a counterweight is acted upon directly by the resistance of a confined fluid.
- Search Class—**
138—HYDRAULIC MOTORS, subclass 8, For elevators, and the subclasses thereunder.
71. **EMERGENCY CABLES.** Auxiliary supporting means for elevator cars, comprising cables attached to the car, which come into operation to support the car upon the failure of the usual supporting means.
- Search Class—**
187—ELEVATORS, subclass 68, Fluid governors, and the subclasses thereunder, for auxiliary supporting or regulating cables controlled by fluid governors.
72. **CABLE RELEASERS.** Devices for disconnecting the hoisting cable from the car on the occurrence of overwinding.
- Note.**—Means may be included for supporting the car after the cable is detached.
- Search Classes—**
187—ELEVATORS, subclass 73, Car brakes and catches, and the subclasses thereunder, for car supporting means *per se*.
61—HYDRAULIC ENGINEERING, subclass 38, Pile drivers, Monkey.
73. **CAR BRAKES AND CATCHES.** Mechanism for supporting the car or restraining its movement independently of the usual motor mechanism by the operation of a catch or brake device affording a means of engagement between the car and shaft structure.
- Search Classes—**
187—ELEVATORS, subclasses 5, Dumb-waiter type, Locked car; 67, Well-end cushions, for cushioning devices which support the car near the well bottom; 68, Fluid governors, and the subclasses thereunder, for fluid retarders acting throughout the travel of the car, and 72, Cable releasers.
16—BUILDERS' HARDWARE, subclass 18, Sash fasteners, and the subclasses thereunder.
188—RAILWAY-BRAKES, subclasses 47, Rail, and 76, Safety catches.
74. **CAR BRAKES AND CATCHES, DOOR-CONTROLLED.** Car brakes and catches whose actuation is dependent upon the movement of an elevator door.
75. **CAR BRAKES AND CATCHES, LANDING CHAIRS.** Laterally projected supports designed to maintain the car at landings at the proper level for loading or unloading.
- Search Class—**
187—ELEVATORS, subclass 5, Dumb-waiter type, Locked car.
76. **CAR BRAKES AND CATCHES, LANDING CHAIRS, CAR-SUPPORTED.** Chairs, including parts supported by the car which are laterally movable to engage with the shaft structure.
- Search Class—**
187—ELEVATORS, subclass 80, Car brakes and catches, Car-supported, and appropriate subclasses thereunder, for similar catch devices.
77. **CAR BRAKES AND CATCHES, DRIVEN CATCH DEVICES.** Car brakes or catches in which the catch or brake device is driven relatively to the car during the normal travel of the latter and which act to brake or to hold the car upon the cessation of or abnormal change in the movement of such driven element.
78. **CAR BRAKES AND CATCHES, DRIVEN CATCH DEVICES, ROTATING GEAR.** Driven catch devices comprising gears on the car engaging with complementary elements supported by the shaft structure.
- Search Class—**
187—ELEVATORS, subclasses 19, Motor mechanism, Rack and pinion; 25, Motor mechanism, Screw, Traveling rotary element, and 69, Fluid governors, Car-supported pump.
79. **CAR BRAKES AND CATCHES, DRIVEN CATCH DEVICES, WELL-SUPPORTED.** Driven catch devices supported on the shaft structure and normally moved from the path of the car as the latter travels upward or downward.
80. **CAR BRAKES AND CATCHES, CAR-SUPPORTED.** Car brakes and catches comprising elements upon the car normally fixed, but capable of movement to engage the cooperating elements in the shaft structure.
- Search Classes—**
187—ELEVATORS, subclass 76, Car brakes and catches, Landing chairs, Car-supported; also subclasses 77, Car brakes and catches, Driven catch devices, and 78, Car brakes and catches, Driven catch devices, Rotating gear, for car-supported catch or brake devices which have a movement relative to the car during the normal travel of the latter.
188—RAILWAY-BRAKES, subclasses 74, Rail, Grippers, Automatic, and 76, Safety catches.

CLASS 187—Continued.

81. CAR BRAKES AND CATCHES, CAR-SUPPORTED, CABLE-CONTROLLED. Car-supported brake or catch devices held out of operation by reason of the normal tension on the hoisting cable.

Search Class—

187—ELEVATORS, subclasses 13, Inclined, Cable-controlled brakes, and 14, Inclined, Cable-controlled brakes, Rail gripping.

82. CAR BRAKES AND CATCHES, CAR-SUPPORTED, CABLE-CONTROLLED, POSITIVE. Cable - controlled catch mechanism wherein the supporting elements in the shaft structure comprise racks, cross-bars, hooks, or the like adapted to provide positive stops for the catch devices on the car.

Search Class—

187—ELEVATORS, subclass 13, Inclined, Cable-controlled brakes, and for positive catches not cable-controlled, subclasses 76, Car brakes and catches, Landing chairs, Car-supported; 80, Car brakes and catches, Car-supported; 89, Car brakes and catches, Car-supported, Speed-controlled, and 92, Car brakes and catches, Car-supported, Operator-controlled.

83. CAR BRAKES AND CATCHES, CAR-SUPPORTED, CABLE-CONTROLLED, POSITIVE, RAIL-SIDE. Positive cable-controlled catch devices mounted adjacent the sides of the guide or safety rail and movable toward the rail sides when actuated.

Search Class—

187—ELEVATORS, subclass 14, Inclined, Cable-controlled brakes, Rail gripping, and for other rail-side catches, subclasses 80, Car brakes and catches, Car-supported; 86, Car brakes and catches, Car-supported, Cable-controlled, Rail-side; 90, Car brakes and catches, Car-supported, Speed-controlled, Rail-side, and 93, Car brakes and catches, Car-supported, Operator-controlled, Rail-side.

84. CAR BRAKES AND CATCHES, CAR - SUPPORTED, CABLE - CONTROLLED, POSITIVE, SLIDING. Positive cable-controlled catch devices mounted to slide toward and from the supporting elements in the shaft structure.

85. CAR BRAKES AND CATCHES, CAR - SUPPORTED, CABLE - CONTROLLED, RAIL - FACE. Cable - controlled catch or brake devices mounted on the car adjacent the face of the guide or safety rail and engaging with such rail-face when actuated.

Note.—Cable-controlled devices which have parts extending behind the rail, so as to grip both the face and rear of the rail, have been placed in this class, subclass 81, Car brakes and catches, Car-supported, Cable-controlled.

Search Class—

187—ELEVATORS, subclasses 82, Car brakes and catches, Car-supported, Cable-controlled, Positive; 84, Car brakes and catches, Car-supported, Cable-controlled, Positive, Sliding, and for other rail-face grips not cable-controlled, subclasses 80, Car brakes and catches, Car-supported; 89, Car brakes and catches, Car-supported, Speed-controlled, and 92, Car brakes and catches, Car-supported, Operator-controlled.

86. CAR BRAKES AND CATCHES, CAR - SUPPORTED, CABLE - CONTROLLED, RAIL - SIDE. Cable - controlled catch or brake devices mounted on the car adjacent the sides of the guide or safety rail and engaging with such rail-sides when actuated.

Search Class—

187—ELEVATORS, subclass 14, Inclined, Cable-controlled brakes, Rail-gripping, and for rail-side catch devices not cable-controlled, subclass 80, Car brakes and catches, Car-supported, and the subclasses thereunder, which include the title "Rail-side."

87. CAR BRAKES AND CATCHES, CAR-SUPPORTED, CABLE - CONTROLLED, RAIL - SIDE, ECCENTRIC. Cable-controlled catch or brake devices eccentrically pivoted and brought into engagement with the rail-sides by a partial rotation.

Note.—Eccentric brake devices not engaging with the rail-sides have not been cross-referenced to this subclass.

88. CAR BRAKES AND CATCHES, CAR-SUPPORTED, CABLE-CONTROLLED, RAIL-SIDE, WEDGE. Cable-controlled catch or brake devices comprising wedge-shaped elements which become wedged against the sides of the guide or safety rail when actuated.

Note.—Wedge brake devices not engaging with the rail-sides have not been cross-referenced to this subclass.

89. CAR BRAKES AND CATCHES, CAR-SUPPORTED, SPEED-CONTROLLED. Car-supported catch or brake devices whose actuation is controlled by the speed of the car.

90. CAR BRAKES AND CATCHES, CAR-SUPPORTED, SPEED-CONTROLLED, RAIL-SIDE. Speed-controlled catch or brake devices mounted on the car adjacent the sides of the guide or safety rail and engaging with such rail sides when actuated.

CLASS 187—Continued.

Search Class—

187—ELEVATORS, subclass 80, Car brakes and catches, Car-supported, and the subclasses thereunder, which include the title "Rail-side," for rail-side brake devices not speed-controlled.

91. CAR BRAKES AND CATCHES, CAR - SUPPORTED, SPEED-CONTROLLED, RAIL-SIDE, VERTICALLY PIVOTED. Speed-controlled rail-side catch or brake devices movable about vertical pivots.

Note.—Vertically pivoted brake devices not speed-controlled have not been cross-referenced to this subclass.

92. CAR BRAKES AND CATCHES, CAR - SUPPORTED, OPERATOR-CONTROLLED. Car-supported catch or brake devices the actuation of which is under the direct control of the operator of the car.

Search Class—

187—ELEVATORS, subclasses 8, Exterior wall, Car brakes, and 76, Car brakes and catches, Landing chairs, Car-supported.

93. CAR BRAKES AND CATCHES, CAR-SUPPORTED, OPERATOR-CONTROLLED, RAIL-SIDE. Operator-controlled catch or brake devices mounted on the car adjacent the sides of the guide or safety rails and engaging with such rail-sides when actuated.

Search Class—

187—ELEVATORS, subclass 80, Car brakes and catches, Car-supported, and the subclasses thereunder, which include the title "Rail-side," for rail-side brake devices not controlled by the operator.

94. COUNTERBALANCES. Improvements in counterbalances for elevator cars.

Search Classes—

187—ELEVATORS, subclasses 15, Shiftable weight, and 70, Fluid governors, Counterweight.

16—BUILDERS' HARDWARE, subclass 20, Sash weights, and the subclasses thereunder, and the subclasses under "Sash balances."

69—ORDNANCE, subclass 39, Mounts, Disappearing gun, Counterpoise.

138—HYDRAULIC MOTORS, subclass 8, For elevators, and the subclasses thereunder, for counterbalancing features involved in hydraulic motor mechanism.

240—ILLUMINATION, subclass 60, Light supports, Vertically adjustable, Counterweight.

248—SUPPORTS, subclasses 5, Adjustable, Vertical, Counterweight, and 6, Adjustable, Vertical, Counterweight, Electric.

95. GUIDES. Improvements in elevator guiding devices.

Search Classes—

187—ELEVATORS, subclasses 2, Building material, for guides adapted to be readily erected, extended, and taken down; 6, Exterior wall, and the subclasses thereunder, for guides specially adapted to be mounted on the exterior wall of a building; 19, Motor mechanism, Rack and pinion; 24, Motor mechanism, Screw, and 25, Motor mechanism, Screw, Traveling rotary element, for guides modified for use in connection with gearing on the car, and 73, Car brakes and catches, and the subclasses thereunder, for guides designed especially for cooperation with brake or catch devices.

20—WOODEN BUILDINGS, subclass 81, Scaffolds, Miscellaneous.

48—GAS, HEATING AND ILLUMINATING, subclass 174, Holders, and the subclasses thereunder.

105—RAILWAY ROLLING STOCK, subclass 94, Derailment guards, and the subclasses thereunder.

189—METALLIC BUILDING STRUCTURES, subclass 14, Skeleton towers, Arrangement, Elevating.

96. GUIDES, MINE CROSSHEADS. Sliding structures for supporting and guiding mine cages or buckets and usually including means for detaching the cage or bucket from the cross-head at the lower end of the shaft.

97. RAILWAY CAR LOCKS. Mechanism for holding a railway car on the elevator car while being hoisted.

Search Classes—

104—RAILWAYS, subclass 49, Buffers, for stops to prevent a railway car from running into the open elevator shaft.

214—LOADING AND UNLOADING, subclass 12, Loading and unloading, Vertical hoist and dump.

98. WELL-OBSTRUCTION DEVICES. Devices to prevent injury by a person or object being caught between the moving car and the edge of a landing.

Search Class—

187—ELEVATORS, subclasses 40, Control mechanism, Well-obstruction, and 41, Control mechanism, Well-obstruction, Electric, for similar devices, which comprise means for stopping the motor mechanism.

CLASS 189.—METALLIC BUILDING STRUCTURES.**DEFINITIONS.***Class.*

This class includes metallic building structures and accessories thereto. In general only metallic structures are classified here; but in a few instances (as in subclass 40, Columns, wood and metal) patents disclosing wood surrounded by metal or a similar construction are included.

This class is general and does not include metallic structures which are specifically provided for elsewhere, as metallic bridges in class 14, BRIDGES; metallic roofs in class 108, ROOFS; metallic ships in class 114, SHIPS; metallic shipping and storing vessels in class 220, METALLIC SHIPPING AND STORING VESSELS; metallic bookcases and shelving in class 45, FURNITURE, and metallic fences in class 39, FENCES.

Subclasses.

1. BUILDINGS. Miscellaneous metallic buildings in which the invention lies in some special adaptation to a particular purpose.

Note.—Buildings not limited to particular material and wooden buildings are classified in class 20, WOODEN BUILDINGS.

Note.—Masonry and concrete structures are classified in class 72, MASONRY AND CONCRETE STRUCTURES.

Search Class—

- 114—SHIPS, subclasses 79, Building, Iron; 80, Building, Iron, Corrugated, and 81, Building, Iron, Tubular.

2. BUILDINGS, PORTABLE. Metallic buildings of a knock down construction.

Search Classes—

- 20—WOODEN BUILDINGS, subclass 2, Portable houses.
- 135—TENTS, CANOPIES, UMBRELLAS, AND CANES, subclass 3, Tents, Frames.

3. BUILDINGS, BINS. Metallic buildings of the special form of elevators, storehouses, or storage-bins.

Note.—This subclass contains patents claiming the structural features only. If any form of conveyor is claimed, the patent is classified in class 193, CONVEYORS, subclass 20, Storehouse, in which subclass search should be made.

Note.—All patents claiming structure or devices specific to the storing or handling of grain and similar substances are classified in class 130, THRESHING, subclass 14, Granaries and bins. If only the general metallic structure is claimed, the patent is classified here.

Search Classes—

- 20—WOODEN BUILDINGS, subclasses 1.2, Bins, and 1.4, Bins, Silos.
- 72—MASONRY AND CONCRETE STRUCTURES, subclasses 5, Buildings, Storage, and 6, Buildings, Elevators and Bins.
- 130—THRESHING, subclass 14, Granaries and bins.

4. BUILDINGS, GREENHOUSES. Metallic buildings specially designed for use as greenhouses.

Note.—This subclass contains structural features only. Any feature of care or propagation of plants carries the patents to class 47, TREES, PLANTS, AND FLOWERS, subclass 27, Plant frames and houses, where search should be made also for features of construction.

5. BUILDINGS, JAILS. The general structure of jails, the arrangement of cells therein, and other features not classifiable in any of the subclasses hereunder.

Search Class—

- 105—RAILWAY ROLLING-STOCK, subclass 75, Cars, Express, Burglar-proof.

6. BUILDINGS, JAILS, ROTARY. Jails containing cells rotatable around a common axis.

Search Classes—

- 4—BATHS AND CLOSETS, and 98, PNEUMATICS, for sanitary and ventilating details.
- 45—FURNITURE, subclass 79, Bookcases, Revolving.
- 46—GAMES AND TOYS, subclass 27, Roundabouts.
- 61—HYDRAULIC ENGINEERING, subclass 55, Harbors, Fortifications and defenses, Turrets.
- 211—STORE FURNITURE, subclasses 20, Display-racks, Rotary, and 21, Display-racks, Rotary, Inclosed.

7. BUILDINGS, JAILS, DOORS, BOLT-WORK. Devices for locking and unlocking doors to cells or corridors at a distance therefrom.

Note.—The structure of iron doors is classified in subclass 46, Doors.

Search Classes—

- 189—METALLIC BUILDING STRUCTURES, subclasses 47 to 50, under Doors, Thermal control, and subclass 52, Doors, Theater-curtains.
- 16—BUILDERS' HARDWARE, subclasses 66, Bolts, Operators, and 133, Shutters, Fasteners, Operators.
- 39—FENCES, subclasses 91 to 97, under Gates, Openers.
- 70—LOCKS AND LATCHES.
- 109—SAFES, subclasses 3, Safe bolt-work; 9, Safe bolt-work, Automatic; and 11, Pressure mechanism.

CLASS 189—Continued.

8. BUILDINGS, JAILS, DOORS, BOLT-WORK, WITH INDICATORS. Devices for locking and unlocking doors to cells or corridors at a distance therefrom, which include some form of indicator.

Search Classes—

- 70—LOCKS AND LATCHES, subclass 6, Locks, Indicator.
- 116—SIGNALS, subclass 31, Indicators, and the subclasses thereunder.

9. BUILDINGS, JAILS, GRATINGS. Bars or similar structures for windows of jails or constituting the walls of cells thereof.

Search Classes—

- 189—METALLIC BUILDING STRUCTURES, subclasses under Grilles and subclass 79, Windows, Guards.
- 20—WOODEN BUILDINGS, subclasses 71, Door and window guards, and 97, Wooden columns.
- 39—FENCES, subclass 140, Gates, Counterguard operators.
- 109—SAFES, subclass 1, Burglar-proof.
- 116—SIGNALS, subclasses under Alarms, Burglar.
- 177—ELECTRIC SIGNALING, subclasses 202, Circuit-closers, Burglar; 314, Alarms, Burglar, and 316, Alarms, Safe.

10. BUILDINGS, JAILS, GRATINGS, CONNECTIONS. Gratings in which the invention resides in the manner of connecting the parts for concealment of the connection, additional strength, or some other purpose specific to jails.

Search Classes—

- 189—METALLIC BUILDING STRUCTURES, subclasses 20, Skeleton towers, Details, Brace adjustments, and 36, Structural units, Joints and connections, for ordinary building joints and connections.
- 14—BRIDGES, subclass 14, Truss, Details, Connections.
- 16—BUILDERS' HARDWARE, subclass 105, Hinges, Concealed, for forms of concealed hinges.
- 109—SAFES, subclass 1, Burglar-proof.

11. PORTABLE TOWERS. Metallic towers mounted (or designed) to be transported and usually including some collapsible feature. Note.—Forms of tilting, knockdown, and portable derricks are classified in class 212, CRANES AND DERRICKS, subclasses 14, Stationary load-support, and 15, Stationary load-support, Jib.

Search Classes—

- 189—METALLIC BUILDING STRUCTURES, subclasses 15, Skeleton towers, Arrangement, Windmills.
- 169—FIRE-EXTINGUISHERS, subclass 18, Portable, Water-towers.
- 227—FIRE-ESCAPES, subclass 20, Portable spars and towers.
- 228—LADDERS, subclass 8, Truck.

12. SKELETON TOWERS. Metallic skeleton towers disclosing features not classifiable in the subclasses hereunder and methods of erecting such towers.

Search Classes—

- 189—METALLIC BUILDING STRUCTURES, subclasses 24, Electric-wire supports, Telegraph-poles, Compound, and 39, Columns, Compound.
- 104—RAILWAYS, subclass 4, Elevated, and the subclasses thereunder.

13. SKELETON TOWERS, ARRANGEMENT. The arrangement in a completed metallic skeleton tower of the several parts thereof when the invention lies in the relative location of the elements of the tower or the structure of the tower as a whole. This subclass contains patents of this description not classifiable in any of the subclasses hereunder.

Search Classes—

- 189—METALLIC BUILDING STRUCTURES, subclasses 24, Electric-wire supports, Telegraph-poles, Compound, and 39, Columns, Compound.
- 14—BRIDGES, subclasses 21, Suspension, Towers and anchors, and 75, Piers.

14. SKELETON TOWERS, ARRANGEMENT, ELEVATING. Metallic skeleton towers which include some device for elevating a lamp (or other lighting-fixture) or a carriage for the workman.

Note.—Lamp-posts are classified in class 240, ILLUMINATION, subclass 84, Light-supports, Posts.

Devices for moving the lamps on such posts or on arms secured thereto are classified in class 240, ILLUMINATION, subclass 63, Light supports, Adjustable for trimming, and the subclasses thereunder.

15. SKELETON TOWERS, ARRANGEMENT, TILTING. Metallic skeleton towers which tilt to render the top thereof accessible.

Note.—Tilting derricks are classified in class 212, CRANES AND DERRICKS, subclasses 14, Stationary load-support, and 15, Stationary load-support, Jib; and other subclasses therein.

Search Classes—

- 189—METALLIC BUILDING STRUCTURES, subclass 11, Portable towers.
- 240—ILLUMINATION, subclass 63, Light supports, Adjustable for trimming.

CLASS 189—Continued.

16. **SKELETON TOWERS, ARRANGEMENT, DERRICKS.** Metallic skeleton towers including features specific to derricks (such as are used in well-drilling machines).
Note.—This subclass contains patents for the tower only. Patents specifically claiming other features connected with well-drilling are classified in class 166, **ARTESIAN AND OIL WELLS**, being cross-referenced here whenever desirable.
Note.—Derricks *per se* and cooperating supporting-towers therefor are classified in class 212, **CRANES AND DERRICKS**, subclasses 1, **Cranes and derricks**; 14, **Stationary load-support**, and 15, **Stationary load-support, Jib**.
Search Class.—
 166—**ARTESIAN AND OIL WELLS**, subclass 3, **Drilling and boring**.
17. **SKELETON TOWERS, ARRANGEMENT, TANKS.** Metallic skeleton towers especially adapted to support tanks.
Note.—This subclass contains patents to the supporting structure only. The tank itself and accessories thereto are classified in classes 137, **WATER DISTRIBUTION**; 195, **ALCOHOL**; 220, **METALLIC SHIPPING AND STORING VESSELS**.
18. **SKELETON TOWERS, ARRANGEMENT, WINDMILLS.** Metallic skeleton towers disclosing features especially designed for windmills.
Note.—This subclass contains the tower structure only. Wind-wheels and accessories thereto are classified in class 170, **WIND-WHEELS**. Pumps and accessories thereto are classified in class 103, **PUMPS**.
19. **SKELETON TOWERS, STRUCTURE.** Limited to the structure of the individual elements of metallic skeleton towers.
Search Classes.—
 189—**METALLIC BUILDING STRUCTURES**, subclasses 37, **Girders**; 38, **Columns**, and 41, **Columns, Shapes**.
 14—**BRIDGES**, subclass 13, **Truss, Structure**.
20. **SKELETON TOWERS, DETAILS, BRACE ADJUSTMENTS.** Devices for tightening diagonals of metallic skeleton towers.
Search Classes.—
 189—**METALLIC BUILDING STRUCTURES**, subclass 24, **Electric-wire supports, Telegraph-poles, Compound**.
 5—**BEDS**, subclass 42, **Bedsteads, Braces**.
21. **SKELETON TOWERS, DETAILS, CAPS AND BASES.** Details of the top and bottom structures of metallic skeleton towers.
Search Class.—
 189—**METALLIC BUILDING STRUCTURES**, subclass 42, **Columns, Caps and bases**.
22. **ELECTRIC-WIRE SUPPORTS.** Structures (usually arches) for supporting electric wires and not elsewhere classifiable.
Note.—This subclass contains supports *per se* and does not include insulators or other media of attachment of the wires to such supports, these being classified in class 173, **ELECTRICITY, CONDUCTORS**.
23. **ELECTRIC-WIRE SUPPORTS, TELEGRAPH-POLES.** Metallic telegraph-poles not classifiable in any of the subclasses hereunder and processes and devices for erecting telegraph-poles.
Note.—Concrete posts and bases are classified in class 72, **MASONRY AND CONCRETE STRUCTURES**, subclasses 82, **Posts**, and the subclasses thereunder, and 85, **Telegraph-poles**.
Note.—Derricks for erecting telegraph-poles are classified in class 212, **CRANES AND DERRICKS**, subclass 14, **Stationary load-support**.
Note.—Steps for telegraph-poles are classified in class 228, **LADDERS**, subclass 22, **Single stile**.
Note.—Cross-arms for telegraph-poles are classified in subclass 33, **Electric-wire supports, Telegraph-poles, Cross-arms, herein**.
Search Class.—
 47—**TREES, PLANTS, AND FLOWERS**, subclass 12, **Trellises**.
24. **ELECTRIC-WIRE SUPPORTS, TELEGRAPH-POLES, COMPOUND.** Metallic telegraph-poles which include one or more braces to the main stem or a truss structure.
Search Classes.—
 189—**METALLIC BUILDING STRUCTURES**, subclass 39, **Columns, Compound**; subclass 12, **Skeleton towers**, and the subclasses thereunder.
 39—**FENCES**, subclasses under **Posts, braces**, and 135, **Posts, Metal, Compound**.
 228—**LADDERS**, subclass 29, **Trussed**.
25. **ELECTRIC-WIRE SUPPORTS, TELEGRAPH-POLES, MULTIPLE SUPPORTS.** Metallic telegraph-poles comprising two or more uprights similarly placed and equally bearing the load.
26. **ELECTRIC-WIRE SUPPORTS, TELEGRAPH-POLES, SECTIONAL.** Metallic telegraph-poles, composed of sections placed on top of one another, with some means of joining together the ends of two adjacent sections.
Note.—Joints in general are classified in this class, subclass 36, **Structural units, Joints and connections**.
Note.—Connections between poles and bases are classified in this class, subclass 28, **Electric-wire supports, Telegraph-poles, Base**.
Search Class.—
 72—**MASONRY AND CONCRETE STRUCTURES**, subclasses 83, **Posts, Inseparable bases**, and 84, **Posts, Separable bases**.

CLASS 189—Continued.

27. **ELECTRIC-WIRE SUPPORTS, TELEGRAPH-POLES, INSULATED PARTS.** Metallic telegraphic-poles disclosing some form of insulation in some portion of its structure, usually to prevent the lower portion of the pole from being charged in case of accident to the conducting-wire or its insulating-support.
Note.—This subclass is limited to insulators in telegraph-pole structure. Insulators for conductors generally are classified in class 173, **ELECTRICITY, CONDUCTORS**, subclass 28, **Insulators**, and the subclasses thereunder.
Search Classes.—
 173—**ELECTRICITY, CONDUCTORS**, subclass 268, **Conductors, Joints, Insulated**.
 191—**ELECTRICITY, ELECTRIC RAILWAYS**, subclass 1, **Conductor supports and insulators**.
 240—**ILLUMINATION**, subclass 85, **Light supports, Bracket and chandelier hangers**.
28. **ELECTRIC-WIRE SUPPORTS, TELEGRAPH-POLES, BASES.** Supports for the bottoms of metallic telegraph-poles not classifiable in any of the subclasses hereunder.
Note.—Concrete bases for poles and posts of all kinds and connections thereto to the poles are classified in class 72, **MASONRY AND CONCRETE STRUCTURES**.
Search Classes.—
 189—**METALLIC BUILDING STRUCTURES**, subclasses 21, **Skeleton towers, Details, Caps and bases**; 26, **Electric-wire supports, Telegraph-poles, Sectional**; 32, **Electric-wire supports, Telegraph-poles, Protectors**, and 42, **Columns, Caps and bases**.
 39—**FENCES**, subclasses under **Posts, Braces**; 86, **Posts, Bases, Metal**, and 134, **Posts, Metal, Anchors**.
 68—**LAUNDRY**, subclass 12, **Clothes-line fasteners**.
 116—**SIGNALS**, subclass 12, **Flagstaves**.
 248—**SUPPORTS**, subclasses 37 and 38, **Staff-holders**.
29. **ELECTRIC-WIRE SUPPORTS, TELEGRAPH-POLES, BASES, ANCHORED.** Supports for the bottoms of metallic telegraph-poles which include some horizontal projection or equivalent structure by which considerable resistance is offered to the removal of the base and not classifiable in either of the subclasses hereunder.
Note.—Bases containing openings for the passage of earth inside the bases are classified in this subclass. Vertical projections or wings attached to bases are classified in the main subclass of "Bases," subclass 28, **Electric-wire supports, Telegraph-poles, Bases**, in this class.
Search Classes.—
 189—**METALLIC BUILDING STRUCTURES**, subclass 90, **Land-anchors**.
 39—**FENCES**, subclasses under **Posts, Braces**, and 134, **Posts, Metal, Anchors**.
30. **ELECTRIC-WIRE SUPPORTS, TELEGRAPH-POLES, BASES, ANCHORED, AUGERS.** Supports for the bottoms of metallic telegraph-poles which include an auger or an auger-like structure for insertion into the ground.
Search Classes.—
 189—**METALLIC BUILDING STRUCTURES**, subclass 91, **Land-anchors, Augers**.
 61—**HYDRAULIC ENGINEERING**, subclass 43, **Piles, Metallic**.
31. **ELECTRIC-WIRE SUPPORTS, TELEGRAPH-POLES, BASES, ANCHORED, EXPANDING.** Supports for the bottoms of metallic telegraph-poles which include some form of expanding device by which a larger resisting area is offered to the withdrawal of the base than was opposed to the insertion thereof.
Search Class.—
 189—**METALLIC BUILDING STRUCTURES**, subclass 92, **Land-anchors, Expanding**.
32. **ELECTRIC-WIRE SUPPORTS, TELEGRAPH-POLES, PROTECTORS.** Caps and other devices for protecting the tops or other parts of metallic telegraph-poles from the effects of moisture.
Note.—Waterproofing walls and cellars is in class 72, **MASONRY AND CONCRETE STRUCTURES**, subclasses 126, **Waterproofing, Cellars**, and 127, **Waterproofing, Walls**.
Search Classes.—
 189—**METALLIC BUILDING STRUCTURES**, subclasses 21, **Skeleton towers, Details, Caps and bases**; 26, **Electric-wire supports, Telegraph-poles, Sectional**; 27, **Electric-wire supports, Telegraph-poles, Insulated parts**; 28, **Electric-wire supports, Telegraph-poles, Bases**, and 42, **Columns, Caps and bases**.
 61—**HYDRAULIC ENGINEERING**, subclass 43, **Piles, Protected**.
33. **ELECTRIC-WIRE SUPPORTS, TELEGRAPH-POLES, CROSS-ARMS.** Cross-arms for metallic telegraph-poles and supports for the same.
Note.—Pins for support of insulators, brackets for the same, and devices for attachment of same to cross-arms or other bodies are classified in class 173, **ELECTRICITY, CONDUCTORS**, subclass 321, **Insulators, Supports**.
Search Class.—
 173—**ELECTRICITY, CONDUCTORS**, subclass 251, **Supports and hangers**.
34. **STRUCTURAL UNITS.** Metallic structural units adapted for general use and not elsewhere classifiable. These units may be single elements, or they may be combinations of single elements to form portions of a complete structure, such as floors, ceilings, partitions, or other parts.
Search Classes.—
 189—**METALLIC BUILDING STRUCTURES**, subclass 3, **Buildings, Bins**.

CLASS 189—Continued.

- 20—WOODEN BUILDINGS, subclass 1, Buildings.
72—MASONRY AND CONCRETE STRUCTURES, subclass 15, Building elements and supports, Integral.
35. STRUCTURAL UNITS, CLIPS OR FASTENERS. Miscellaneous devices specially adapted to bind together metallic parts or to attach a member to a metallic part.
Search Classes—
173—ELECTRICITY, CONDUCTORS, subclass 251, Supports and hangers.
248—SUPPORTS, subclass 31, Pipe or cable hangers.
36. STRUCTURAL UNITS, JOINTS AND CONNECTIONS. Limited to details of joints or connections between metallic structural elements.
Note.—Joints having some portion fusible at a low temperature are classified in this class, subclass 45, Thermally-controlled devices, and the subclasses mentioned in the notes thereto.
Search Classes—
189—METALLIC BUILDING STRUCTURES, subclasses 2, Buildings, Portable; 10, Buildings, Jails, Gratings, Connections; 11, Portable towers; 20, Skeleton towers, Details, Brace adjustments; 21, Skeleton towers, Details, Caps and bases; 26, Electric-wire supports, Telegraph-poles, Sectional; 33, Electric-wire supports, Telegraph-poles, Cross-arms; 41, Columns, Shapes, and 42, Columns, Caps and bases.
14—BRIDGES, subclasses 14, Truss, Details, Connections, and 75, Piers.
20—WOODEN BUILDINGS, subclass 95, Framing sockets.
29—METAL-WORKING, subclass 150, Blanks and processes, Braces and brackets.
39—FENCES, subclasses 6, Fences, Iron, and 104, Fences, Iron, Panel.
45—FURNITURE, subclass 78, Bookcases, Knockdown.
61—HYDRAULIC ENGINEERING, subclass 42, Piles, Metallic.
72—MASONRY AND CONCRETE STRUCTURES, subclasses 15, Building elements and supports, Integral; 101, Bonding and tying, and the subclasses thereunder, and 114, Reinforcing elements, Joints.
137—WATER DISTRIBUTION, subclasses under Pipe-couplings.
247—ELECTRICITY, CONDUITS, subclass 1, Boxes, Pipe connections.
37. GIRDERS. Beams, principally metallic, for use in buildings, bridges, and other structures.
Note.—Girders are distinguished from columns in that the former are used in a horizontal position, the latter in a vertical.
Search Classes—
14—BRIDGES, subclasses 17, Girder, and 73, Floors.
29—METAL-WORKING, subclass 165, Blanks and processes, Railway-car irons, Axles.
38. COLUMNS. Miscellaneous columns, principally metallic, for use in upright position in buildings, bridges, and other structures.
Note.—Wooden columns are classified in class 20, WOODEN BUILDINGS, subclass 97, Wooden columns. Concrete columns are in class 72, MASONRY AND CONCRETE STRUCTURES.
Search Classes—
189—METALLIC BUILDING STRUCTURES, subclass 37, Girders.
14—BRIDGES, subclass 13, Truss, Structure.
29—METAL-WORKING, subclass 155, Blanks and processes, Columns and girders.
61—HYDRAULIC ENGINEERING, subclasses under Piles.
239—RAILWAY RAILS AND JOINTS, subclass 16, Rails, Compound.
39. COLUMNS, COMPOUND. Metallic columns which include one or more braces to the main stem or a truss structure.
Note.—These structures are in some respects similar to skeleton towers, and search should be made in the subclasses thereof in this class.
Search Class—
189—METALLIC BUILDING STRUCTURES, subclasses 24, Electric-wire supports, Telegraph-poles, Compound, and 37, Girders.
40. COLUMNS, WOOD AND METAL. Columns composed of wood and metal, both usually extending the full length.
41. COLUMNS, SHAPES. Metallic columns including as the invention or a part thereof the shape of integral columns or of column elements, usually the arrangement of the material, as shown by a cross-section thereof.
42. COLUMNS, CAPS AND BASES. Details of caps and bases of metallic columns and of connections thereof.
Search Classes—
189—METALLIC BUILDING STRUCTURES, subclasses 21, Skeleton towers, Details, Caps and bases; 26, Electric-wire supports, Telegraph-poles, Sectional; 28, Electric-wire supports, Telegraph-poles, Bases; 32, Electric-wire supports, Telegraph-poles, Protectors, and 36, Structural units, Joints and connections.
20—WOODEN BUILDINGS, subclasses 95, Framing sockets, and 96, Post-bases.
43. STAIRS. Miscellaneous metallic stairs and metallic devices for use in connection with stairs.
Note.—Metallic newel-posts are classified in this class, subclass 38, Columns; Railings in class 39, FENCES, subclass 6, Fences, iron; Masonry and concrete stairs in class 72, MASONRY AND CONCRETE STRUCTURES, subclass 96, Stairs.
Search Classes—
20—WOODEN BUILDINGS, subclass 10, Stairs.
227—FIRE-ESCAPES, subclass 5, Balcony.
228—LADDERS, subclass 27, Trap-door operating.

CLASS 189—Continued.

44. STAIRS, SPIRAL. Metallic stairs spiral in form, the ascent and descent being made around a line as center, and some analogous in construction.
Search Classes—
20—WOODEN BUILDINGS, subclass 10, Stairs.
227—FIRE-ESCAPES, subclass 33, Stairway-towers.
45. THERMALLY-CONTROLLED DEVICES. Miscellaneous connections fusible at a low temperature, or inflammable, to operate metallic doors, shutters, windows, etc., and not classifiable in any of the subclasses herein of thermally-controlled devices.
Note.—Many devices operable by changes of temperature are classified in classes 236, DAMPERS, AUTOMATIC, subclass 5, Expansion, and the subclasses thereunder; subclass 9, Traps, Thermostatic and the subclasses thereunder; and 237, HEAT-DISTRIBUTING SYSTEMS, subclass 19, Steam-radiators, Attachments.
Note.—Electrical thermally-controlled devices are classified in class 175, ELECTRICITY, GENERAL APPLICATIONS, subclasses 215, Lightning-arresters, Thermal; 273, Cut-outs, Thermal, and the subclasses thereunder, and 292, Switches, Mechanical, Thermal cut-out and in class 177, ELECTRIC SIGNALING, subclass 128, Circuit-closers, Thermal, and the subclasses thereunder.
Search Classes—
189—METALLIC BUILDING STRUCTURES, subclasses under Doors, Thermal control; 58, Shutters, Roll, Thermal control; 71, Windows, Swinging sash, Thermal control, and 74, Windows, Vertically-sliding sash, Thermal control.
16—BUILDERS' HARDWARE, subclass 56, Shutters, Fasteners, Fire.
116—SIGNALS, subclass 11, Alarms, Fire.
137—WATER DISTRIBUTION, subclass 35, Cocks and faucets, Thermal.
169—FIRE-EXTINGUISHERS, subclasses of "automatic" devices.
46. DOORS. Miscellaneous metallic doors and metallic door-frames.
Note.—This subclass and the subclasses hereunder include all structures and devices of general application to both doors and shutters when there is not involved some feature specific to shutters. In such case the patent is classified in subclass 54, Shutters, hereof, or some subclass thereunder.
Search Class—
20—WOODEN BUILDINGS, subclasses under Doors.
47. DOORS, THERMAL CONTROL, HORIZONTALLY-SLIDING. Horizontally-sliding metallic doors or shutters which include in the mechanism for retaining them in open position some device which under the influence of heat will release the door or shutter and allow it to close automatically. There are included also in this subclass devices to receive such doors as they close and hold them fast.
Search Class—
189—METALLIC BUILDING STRUCTURES, subclass 45, Thermally-controlled devices, and the subclasses there cited.
48. DOORS, THERMAL CONTROL, VERTICALLY-SLIDING. Vertically-sliding metallic doors or shutters which include in the mechanism for retaining them in open position some device which under the influence of heat will release the door or shutter and allow it to close automatically.
Search Class—
189—METALLIC BUILDING STRUCTURES, subclass 45, Thermally-controlled devices and the subclasses there cited.
49. DOORS, THERMAL CONTROL, HORIZONTALLY-SWINGING. Horizontally-swinging metallic doors or shutters which include in the mechanism for retaining them in open position some device which under the influence of heat will release the door or shutter and allow it to close automatically.
Search Class—
189—METALLIC BUILDING STRUCTURES, subclass 45, Thermally-controlled devices, and the subclasses there cited.
50. DOORS, THERMAL CONTROL, VERTICALLY-SWINGING. Vertically-swinging metallic doors or shutters which include in the mechanism for retaining them in open position some device which under the influence of heat will release the door or shutter and allow it to close automatically.
Search Class—
189—METALLIC BUILDING STRUCTURES, subclass 45, Thermally-controlled devices, and the subclasses there cited.
51. DOORS, SECTIONAL. Metallic doors composed of sections which move either singly or together to open a part or the whole of the door-space.
Search Classes—
189—METALLIC BUILDING STRUCTURES, subclasses 59, Shutters, Horizontally-sliding, and 60, Shutters, Vertically-sliding.
20—WOODEN BUILDINGS, subclasses 20, Doors, Sliding, Jointed; 32, Doors, Car, Grain, Vertical-slide; 52, Windows, Sliding sash, and 61, Shutters, Sliding.
156—CURTAINS, SHADES, AND SCREENS, subclasses 38, Window-screens, Extensible, and 43, Awnings, Rigid, Intermovable sections.
52. DOORS, THEATER-CURTAINS. Metallic curtains separating the stage from the auditorium and means for operating them.
Note.—Theater curtains constructed wholly of asbestos are classified in class 156, CURTAINS, SHADES, AND SCREENS.

CLASS 189—Continued.

Search Classes—

- 189—METALLIC BUILDING STRUCTURES, subclasses 47, Doors, Thermal control, Horizontally-sliding; 50, Doors, Thermal control, Vertically-sliding, and 81, Fire-shields, Collapsible.
- 14—BRIDGES, subclasses under 50, Draw, Gates.
- 39—FENCES, subclasses under Gates, Openers.
- 156—CURTAINS, SHADES, AND SCREENS.
53. DOORS, PANELS. The structure of metallic panels for doors and the devices for securing panels in the frame of the door.
- Search Classes—**
- 189—METALLIC BUILDING STRUCTURES, subclasses 77, Windows, Sash, Pane supports and fastenings, and 78, Windows, Sash, Pane supports and fastenings, Removable.
- 20—WOODEN BUILDINGS, subclasses 36, Doors, Door construction, Removable panel, and 92, Splices and joints.
- 72—MASONRY AND CONCRETE STRUCTURES, subclasses 118, Reinforcing elements, Lathing, Furring and fastening, and 121, Reinforcing elements, Lathing, Corner-beads.
- 211—STORE FURNITURE, subclass 25, Show-cases.
54. SHUTTERS. Metallic shutters involving structures not classifiable in any of the subclasses hereunder.
- Note.—Devices and structures of general application to both doors and shutters are classified in subclass 46, Doors, hereof, or some subclass thereunder, unless some feature specific to shutters is involved.
- Note.—Devices for operating shutters (other than roll) are classified in class 16, BUILDERS' HARDWARE, subclass 24, Shutters, Workers, and the subclasses thereunder, and subclass 56, Shutters, Fasteners, Fire, and in class 39, FENCES, subclass 97, Gates, openers, window. See also in this class, subclass 52, Doors, Theater-curtains, and the subclasses under Doors, Thermal control.
- Note.—For hinges, locking devices, and other hardware pertaining to shutters, see appropriate subclasses in class 16, BUILDERS' HARDWARE.
- Search Classes—**
- 20—WOODEN BUILDINGS, subclasses under Shutters.
- 108—ROOFS, subclass 31, Skylights, Operating devices.
- 126—STOVES AND FURNACES, subclass 135, Fireplaces, Blowers.
- 228—LADDERS, subclass 21, Shutter.
55. SHUTTERS, AWNINGS. Metallic shutters adapted to be thrown outward at the bottom to serve also as an awning.
- Note.—For hinges, locking devices, and other hardware pertaining to shutters, see appropriate subclasses in class 16, BUILDERS' HARDWARE.
- Search Classes—**
- 16—BUILDERS' HARDWARE, subclass 48, Hinges, Awning-blind.
- 20—WOODEN BUILDINGS, subclasses 55, Windows, Storm, and 59, Shutters, Awning.
- 105—RAILWAY ROLLING-STOCK, subclass 213, Cars, Street, Awnings.
- 156—CURTAINS, SHADES, AND SCREENS, subclasses 15, Awnings, and the subclasses thereunder, and 17, Venetian blinds.
56. SHUTTERS, ROLL. Metallic shutters adapted to be rolled upon a roller or drum to uncover a window or other opening.
- Search Classes—**
- 189—METALLIC BUILDING STRUCTURES, subclass 81, Fire-shields, Collapsible.
- 45—FURNITURE, subclass 92, Desks, Lids, Flexible.
- 126—STOVES AND FURNACES, subclass 135, Fireplaces, Blowers.
- 156—CURTAINS, SHADES, AND SCREENS, subclasses 16, Flexible blinds, and 39, Window-screens, Rolling.
57. SHUTTERS, ROLL, OPERATING DEVICES. Devices for operating metallic roll-shutters.
- Search Classes—**
- 189—METALLIC BUILDING STRUCTURES, subclasses 55, Shutters, Awnings; 58, Shutters, Roll, Thermal control, and 81, Fire-shields, Collapsible.
- 39—Fences, subclasses 94, Gates, Openers, Sliding-door, and 140, Gates, Counter guard operators.
- 40—CARD, PICTURE, AND SIGN EXHIBITING, various subclasses of reel and web.
- 45—FURNITURE, subclasses 3, File-cabinets, Revolving; 79, Bookcases, Revolving, and 92, Desks, Lids, Flexible.
- 126—STOVES AND FURNACES, subclass 135, Fireplaces, Blowers.
- 156—CURTAINS, SHADES, AND SCREENS, subclasses 13, Window-cornices; 16, Flexible blinds; 39, Window-screens, Rolling; 44, Awnings, Roll and reel; and appropriate subclasses under Shade.
- 211—STORE FURNITURE, subclasses 18, Display-racks, Roll; 20, Display-racks, Rotary; 21, Display-racks, Rotary, Inclosed; 23, Display-racks, Sample-sheet, Rotary, and 35, Pattern-exhibitors.
58. SHUTTERS, ROLL, THERMAL CONTROL. Metallic roll shutters which include in the mechanism for retaining them in inoperative position some device which under the influence of heat will release the retaining mechanism and thereby enable the shutters to cover the window or other opening automatically.
- Search Class—**
- 189—METALLIC BUILDING STRUCTURE, subclass 45, Thermally-controlled devices, and the subclasses there cited.
59. SHUTTERS, HORIZONTALLY-SLIDING. Metallic shutters which slide horizontally to cover or uncover a window.
- Search Classes—**
- 189—METALLIC BUILDING STRUCTURES, subclasses 47, Doors, Thermal control, Horizontally-sliding; 51, Doors, Sectional, and 60, Shutters, Vertically-sliding.

CLASS 189—Continued.

- 14—BRIDGES, subclasses 54, Draw, Gates, Bridge-operated, Displacement, Horizontally-sliding, and 62, Draw, Gates, Bridge-operated, Shaft-rotation, Horizontally-sliding.
- 16—BUILDERS' HARDWARE, subclasses 24, Shutters, Workers, and 138, Shutters, Workers, Sliding shutter.
- 20—WOODEN BUILDINGS, subclass 61, Shutters, Sliding, and the various subclasses of Horizontally-sliding structures under Doors and Windows.
60. SHUTTERS, VERTICALLY-SLIDING. Metallic shutters which slide vertically (as a whole or in sections) to cover or uncover a window or other opening. Some sections also fold.
- Search Classes—**
- 189—METALLIC BUILDING STRUCTURES, subclasses 48, Doors, Thermal control, Vertically-sliding; 51, Doors, Sectional; 57, Shutters, Roll, Operating devices; 59, Shutters, Horizontally-sliding; 72, Windows, Vertically-sliding sash, and 81, Fire-shields, Collapsible.
- 14—BRIDGES, subclasses 52, Draw, Gates, Hand or motor operated, Vertically-sliding; 58, Draw, Gates, Bridge-operated, Displacement, Vertically-sliding, and 66, Draw, Gates, Bridge-operated, Shaft-rotation, Horizontally-sliding.
- 20—WOODEN BUILDINGS, subclass 61, Shutters, Sliding, and the various subclasses of Vertically-sliding structures under Doors and under Windows.
- 126—STOVES AND FURNACES, subclass 135, Fireplaces, Blowers.
- 156—CURTAINS, SHADES, AND SCREENS, subclasses 14, Window-screens, and 38, Window-screens, Extensible.
61. SHUTTERS, REGISTERING SLIDE. Metallic shutter structures consisting of a fixed grating and a sliding grating adapted to register therewith to cover or uncover apertures in the fixed grating.
- Search Classes—**
- 20—WOODEN BUILDINGS, subclass 60, Shutters, Registering slide.
- 98—PNEUMATICS, subclass 31, Window-ventilators.
- 126—STOVES AND FURNACES, subclasses 135, Fireplaces, Blowers, and 325, Hot-air registers.
62. SHUTTERS, SLATS, PIVOTED. Pivoted slats for metallic shutters and their journals, operating devices, and fasteners or locks.
- Search Classes—**
- 189—METALLIC BUILDING STRUCTURES, subclasses 55, Shutters, Awnings, and 56, Shutters, Roll.
- 16—BUILDERS' HARDWARE, subclass 1, Blind-stops.
- 20—WOODEN BUILDINGS, subclass 62, Shutters, Slats, Pivoted.
- 156—CURTAINS, SHADES, AND SCREENS, subclasses 16, Flexible blinds, and 17, Venetian blinds.
63. SHUTTERS, SLATS, FIXED. Metallic shutters having fixed slats or structures in imitation thereof.
- Search Class—**
- 20—WOODEN BUILDINGS, subclass 63, Shutters, Slats, Fixed.
64. WINDOWS. Metallic windows not classifiable in any of the subclasses hereunder.
- Note.—Devices for operating windows are classified in class 39, FENCES, subclass 97, Gates, Openers, Window; Skylights and operating devices therefor in class 108, ROOFS; Wire-glass and processes of manufacture thereof in class 49, GLASS, subclasses 32, Molding, Wire-glass, and 86, Processes, Molding, Wire-glass.
- Search Classes—**
- 20—WOODEN BUILDINGS, subclass 40, Windows, Miscellaneous.
- 211—STORE FURNITURE, subclass 25, Show-cases.
65. WINDOWS, WEATHERPROOFING. Devices attached to metallic window frames or sashes to keep out wind or moisture. No attempt has been made to separate those patents which show merely flanges or other modified structure on frame or sash, or both. To go into this subclass, patents must show some device additional to the structure of the frame and sash.
- Note.—The specific form of laterally-sliding weather-strips, usually found in vertically-sliding metallic windows, are in this class, subclass 70, Windows, Swinging-sash, Laterally-sliding weather-strips.
- Search Class—**
- 20—WOODEN BUILDINGS, subclasses 65, Weather-strips, Hinged; 66, Weather-strips, Hinged, Sills; 67, Weather-strips, Hinged, Spring, and 69, Weather-strips, Packing.
66. WINDOWS, DOUBLE MOVEMENT. Metallic windows having sashes which both slide and swing, but are not classifiable in the subclasses hereunder.
- Search Class—**
- 20—WOODEN BUILDINGS, subclasses 42, Windows, Sliding and swinging sash, Miscellaneous; 44, Windows, Sliding and swinging sash, Guide-rod pivot; 46, Windows, Sliding and swinging sash, Separable hinge, Side-swing; 47, Windows, Sliding and swinging sash, Separable hinge, Vertical-swing, and 48, Windows, Sliding and swinging sash, Sliding frame, Vertically-pivoted sash.
67. WINDOWS, DOUBLE MOVEMENT, SLIDING PIVOT. Metallic windows having a double movement in which the sash is pivotally attached to a strip or stile (or other device supported by the sash-cord) which slides in guideways on the frame.
- Search Class—**
- 20—WOODEN BUILDINGS, subclasses 43, Windows, Sliding and swinging sash, Cord-fastener, Pivot; 49, Windows, Sliding and swinging sash, Sliding stile, Horizontally-pivoted sash, and 50, Windows, Sliding and swinging sash, Sliding stile, Vertically-pivoted sash.

CLASS 189—Continued.

68. WINDOWS, DOUBLE MOVEMENT, SWINGING FRAME. Metallic windows having a double movement in which the sashes slide in an auxiliary swinging frame.

Note.—For vertically-sliding windows, see in this class, subclass 72, Windows, Vertically-sliding sash, and the subclasses thereunder.

Note.—For swinging windows, see in this class, subclass 69, Windows, Swinging sash, and the subclasses thereunder.

Search Class—

20—WOODEN BUILDINGS, subclasses 45, Windows, Sliding and swinging sash, Horizontally-pivoted frame, Sliding sash, and 51, Windows, Sliding and swinging sash, Vertically-pivoted frame, Sliding sash.

69. WINDOWS, SWINGING SASH. Metallic windows having a swinging sash which are not classifiable in the subclasses hereunder.

Search Classes—

189—METALLIC BUILDING STRUCTURES, subclasses 66, Windows, Double movement, and the subclasses thereunder, and 79, Windows, Guards.

20—WOODEN BUILDINGS, subclass 53, Windows, Swinging sash.

70. WINDOWS, SWINGING SASH, Laterally-sliding WEATHER-STRIPS. Swinging metallic windows which include weather-strips mounted on either the frame or the sash and arranged for lateral sliding motion.

Note.—Miscellaneous devices for weatherproofing metallic windows will be found in this class, subclass 65, Windows, Weatherproofing.

Search Classes—

189—METALLIC BUILDING STRUCTURES, subclasses 67, Windows, Double movement, Sliding pivot, and 73, Windows, Vertically-sliding sash, Movable or removable guards.

20—WOODEN BUILDINGS, subclass 68, Weather-strips, Sliding.

71. WINDOWS, SWINGING SASH, THERMAL CONTROL. Metallic windows having a swinging sash which include in the mechanism for retaining the sash in open position some device which under the influence of heat will release the retaining mechanism and allow the windows to close automatically.

Search Class—

189—METALLIC BUILDING STRUCTURES, subclass 45, Thermally-controlled devices, and the subclasses there cited.

72. WINDOWS, VERTICALLY-SLIDING SASH. Metallic windows having a sliding sash which are not included in the following two subclasses. Features of both sash and frame which mutually cooperate will be found here and in the subclasses hereunder.

Search Classes—

189—METALLIC BUILDING STRUCTURES, subclass 66, Windows, Double-movement, and the subclasses thereunder.

20—WOODEN BUILDINGS, subclass 52, Windows, Sliding sash.

73. WINDOWS, VERTICALLY-SLIDING SASH, MOVABLE OR REMOVABLE GUARDS. Metallic windows having a sliding sash which include guards or stops or strips which are movable or removable to permit the sash to be adjusted or raised or taken out. These guards usually aid in weatherproofing the window.

Search Classes—

189—METALLIC BUILDING STRUCTURES, subclasses 65, Windows, Weatherproofing, and 70, Windows, Swinging sash, Laterally-sliding weather-strips.

20—WOODEN BUILDINGS, subclasses 54, Shutters, Sashes, Cushioned, and 68, Weather-strips, Sliding.

74. WINDOWS, VERTICALLY-SLIDING SASH, THERMAL CONTROL. Metallic windows having a sliding sash which include in the mechanism for retaining the sash in open position some device which under the influence of heat will release the retaining mechanism and allow the windows to close automatically.

Search Class—

189—METALLIC BUILDING STRUCTURES, subclass 45, Thermally-controlled devices, and the subclasses there cited.

75. WINDOWS, FRAMES. The structure of metallic window-frames (other than those for sliding or swinging sash) and of connections between frame and wall.

Note.—Features of metallic frames intended for use with sliding or swinging sash and cooperating therewith will be found in subclasses 69, Windows, Swinging sash, and 72, Windows, Vertically-sliding sash, herein, and the subclasses to which reference is therein made. Metallic window-frames which are modified to effect ventilation are classified in class 98, PNEUMATICS, subclass 31, Window-ventilators.

Search Class—

72—MASONRY AND CONCRETE STRUCTURES, subclass 98, Sills and jambs.

76. WINDOWS, SASH. Metallic sash structures not included in the two following subclasses.

Note.—This subclass does not include patents in which the sash and the frame construction mutually modify each other. For such search should be made in this class, subclasses 69, Windows, Swinging sash; 72, Windows, Vertically-sliding sash, and 75, Windows, Frames. Metallic window-sash which are modified to effect ventilation are classified in class 98, PNEUMATICS, subclass 31, Window-ventilators.

Search Classes—

20—WOODEN BUILDINGS, subclasses 56, Windows, Sash construction, and 92, Splices and joints, and the subclasses there cited.

108—ROOFS, subclass 16, Skylights.

211—STORE FURNITURE, subclass 25, Show-cases.

CLASS 189—Continued.

77. WINDOWS, SASH, PANE SUPPORTS AND FASTENINGS. The structure of metallic bars and other supports for glass and devices for securing the glass thereon.

Search Classes—

20—WOODEN BUILDINGS, subclass 56, Windows, Sash construction.

88—OPTICS, subclass 59, Building-lights, Vault.

94—PAVING, subclass 7, Vault-covers.

108—ROOFS, subclass 16, Skylights.

211—STORE FURNITURE, subclass 25, Show-cases.

78. WINDOWS, SASH, PANE SUPPORTS AND FASTENINGS, REMOVABLE. The structure of metallic bars and other supports for glass and devices for securing the glass thereon, said securing devices including some detachable feature.

Search Classes—

20—WOODEN BUILDINGS, subclass 56, windows, Sash construction.

108—ROOFS, subclass 16, Skylights.

79. WINDOWS, GUARDS. Devices (such as bars, gratings, etc.) attached to metallic (usually cellar) windows to allow ventilation or the admission of coal or the like and to prevent unauthorized persons from breaking in.

Note.—For structure of the grating see subclass 9, Buildings, Jails, Gratings, herein, and the subclasses under Grilles.

Search Class—

20—WOODEN BUILDINGS, subclass 71, Door and window guards.

80. FIRE-SHIELDS. Metallic devices, usually portable, for use near a conflagration to protect buildings not burning or to confine the fire to the burning building or a part thereof.

Search Classes—

75—METALLURGY, subclass 196, Furnaces, Shields.

126—STOVES AND FURNACES, subclass 202, Fenders, Fire screen or guard.

81. FIRE-SHIELDS, COLLAPSIBLE. Fire-shields adapted to be rolled, folded, or otherwise compacted into convenient form for transportation.

82. GRILLES, COMPOSITE. Metallic grilles other than integral in structure.

Note.—See also subclasses cited in notes under subclass 84, Grilles, securing devices, herein.

Search Class—

189—METALLIC BUILDING STRUCTURES, subclass 77, Windows, Sash, Pane supports and fastenings.

83. GRILLES, INTEGRAL. Metallic grilles cast integral or otherwise produced from a single piece of material.

Note.—See also subclasses cited in notes under subclass 84, Grilles, securing devices, herein.

Search Class—

20—METAL-WORKING, subclasses 2, Special work, Battery-grid making, and 160, Blanks and processes Grilles.

84. GRILLES, SECURING DEVICES. Frames surrounding and supporting metallic grilles and devices for securing the ends of the bars to the frames.

Search Classes—

189—METALLIC BUILDING STRUCTURES, subclass 79, Windows, Guards.

5—BEDS, subclasses 29, Bed-bottoms, Springs; 39, Bed-bottoms, Fabrics, and 40, Bed-bottoms, Fabrics and springs.

20—WOODEN BUILDINGS, subclasses 15, Panels and wainscoting, and 71, Door and window guards.

21—CARRIAGES AND WAGONS, subclass 55, Steps.

20—METAL-WORKING, subclass 160, Blanks and processes, Grilles.

39—FENCES, subclasses 6, Fences, Iron; 104, Fences, Iron, Panel, and 42, Gates, Railway, Cattle-guard.

98—PNEUMATICS, subclasses 31, Window-ventilators, and 32, Window-ventilators, Condensation-preventers.

109—SAFES, subclasses 1, Burglar-proof, and 2, Fireproof.

126—STOVES AND FURNACES, subclass 325, Hot-air registers.

85. METAL SHEATHING. Sheets of metal, plain, corrugated, or otherwise embellished, for use on walls or ceilings.

Search Classes—

61—HYDRAULIC ENGINEERING, subclass 52, Piles, Sheet-piling.

72—MASONRY AND CONCRETE STRUCTURES, subclasses 19, Walls, Faced, Tile, Wall-anchored; 118, Reinforcing elements, Lathing, Furring, and fastening, and 120, Reinforcing elements, Lathing, Wire, Furring and fastening.

108—ROOFS, subclasses 12, Lap-joint; 15, Car, Metal-lined, and the subclasses under Metallic.

113—SHEET-METAL WARE, MAKING, various subclasses under Can-making machines, Seaming machines, and Tube-making.

86. METAL SHEATHING, OVERLAPPING ENDS. Metal-sheathing joints made by overlapping the ends or interlocking the same, with no accessories except nails, staples, or rosettes.

Search Classes—

61—HYDRAULIC ENGINEERING, subclass 52, Piles, Sheet-piling.

72—MASONRY AND CONCRETE STRUCTURES, subclasses 19, Walls, Faced, Tile, Wall-anchored; 118, Reinforcing elements, Lathing, Furring and fastening, and 120, Reinforcing elements, Lathing, Wire, Furring and fastening.

108—ROOFS, subclasses 12, Lap-joint; 15, Car, Metal-lined, and the subclasses under Metallic.

113—SHEET-METAL WARE, MAKING, various subclasses under Can-making machines, Seaming machines, and Tube-making.

220—METALLIC SHIPPING AND STORING VESSELS, subclasses 70, Can-closures, Rip, Strip, Integral, Double-seam, and 81, Can-seam, and the subclasses thereunder.

CLASS 189—Continued.

87. METAL SHEATHING, OVERLAPPING ENDS, CORNICE. Metal sheathing used to make a curved connection between horizontal and vertical surfaces, the joints thereof being made by overlapping the ends or interlocking the same, with no accessories except nails, staples, or rosettes.

Search Class—

189—METALLIC BUILDING STRUCTURES, subclass 89, Metal sheathing, Securing devices, Cornice.

88. METAL SHEATHING, SECURING DEVICES. Metal sheathing joints which include a cap or other securing device (in addition to nails, staples, or rosettes).

Search Classes—

189—METALLIC BUILDING STRUCTURES, subclass 38, Columns.

61—HYDRAULIC ENGINEERING, subclass 52, Piles, Sheet-piling.

72—MASONRY AND CONCRETE STRUCTURES, subclasses 19, Walls, Faced, Tile, Wall-anchored; 118, Reinforcing elements, Lathing, Furring and fastening, and 120, Reinforcing elements, Lathing, Wire, Furring and fastening.

108—ROOFS, subclasses 12, Lap-joint; 15, Car, Metal-lined, and the subclasses under Metallic.

113—SHEET-METAL WARE, MAKING, various subclasses under Can-making machines, Seaming-machines, and Tube-making.

89. METAL SHEATHING, SECURING DEVICES, CORNICE. Metal sheathing used to make a curved connection between horizontal and vertical surfaces, the joints thereof including a cap or other securing device, (in addition to nails, staples, or rosettes.)

Search Class—

189—METALLIC BUILDING STRUCTURES, subclass 87, Metal sheathing, Over-lapping ends, Cornice.

90. LAND-ANCHORS. Land-anchors disclosing features not classifiable in the two subclasses hereunder, and miscellaneous devices for insertion of such anchors.

CLASS 189—Continued.

Search Classes—

189—METALLIC BUILDING STRUCTURES, subclass 29, Electric-wire supports, Telegraph-poles, Bases, Anchored.

14—BRIDGES, subclass 21, Suspension, Towers and anchors.

37—EXCAVATING, subclass 18, Dredgers, Anchoring.

111—SEEDERS AND PLANTERS, subclass 42, Check row Anchors.

114—SHIPS, subclass 206, Anchors.

185—MOTORS, subclass 25, Horse power type, Anchors.

91. LAND-ANCHORS, AUGERS. Land-anchors which include an auger or an auger-like structure for insertion into the ground.

Search Classes—

189—METALLIC BUILDING STRUCTURES, subclass 30, Electric-wire supports, Telegraph-poles, Bases, Anchored, Augers.

166—ARTESIAN AND OIL WELLS, subclass 11, Earth-auger, and the subclasses thereunder.

92. LAND-ANCHORS, EXPANDING. Land-anchors which include some form of expanding device by which a larger resisting area is offered to the withdrawal of the anchor than was opposed to the insertion thereof. There are included also in this subclass patents for devices for inserting such anchors.

Search Classes—

189—METALLIC BUILDING STRUCTURES, subclass 31, Electric-wire supports, Telegraph-poles, Bases, Anchored, Expanding.

14—BRIDGES, subclass 21, Suspension, Towers, and Anchors.

85—DRIVEN, HEADED, AND SCREW-THREADED FASTENINGS, subclasses 2, Bolts, Expanding core; 2.4, Bolts, Expanding sleeve; 2.8, Bolts, Expanding sleeve, Double-wedge; 3, Bolts, Pivoted end locks; 6, Bolts, Threadless, Axial wedge, and 13, Nails, spikes, and tacks, Multiple-pronged.

114—SHIPS, subclasses 207, Anchors, Fluke; 208, Anchors, Fluke, Pivoted, and 210, Anchor-trippers.

CLASS 190.—BAGGAGE.

DEFINITIONS.

Class.

This class comprises trunk and traveling-bag structures and all combination structures including these as parts.

Camp-kits are included when the box has room for storage of supplies and is convertible into a desk or table on account of the close resemblance of these structures to trunks which are convertible into desks or tables.

Traveling-bag fasteners other than those using a strap-loop or in combination with handles are classified in class 70, LOCKS AND LATCHES, as are also trunk-fasteners, bag-locks, and trunk-locks.

Trunk casters and hinges even though combined with corner-shields are classified in class 16, BUILDERS' HARDWARE, in the various subclasses of Casters, and in Hinges, Box, respectively.

Subclasses.

1. CONVERTIBLE. All structures in trunk form which are capable of change to adapt them to other uses are here classified. Allied convertible structures not including trunks in the combination are found under the heads of the various articles into which the trunks are convertible.

2. CONVERTIBLE, BED. The changed form is that of a bed or couch, which in its folded or closed position holds at least the bedclothing or mattress and usually has storage-room also for other clothing, etc.

3. CONVERTIBLE, BUREAU. Trunks made up wholly or partly of drawers.

Note.—Small drawers in bookcases—such as are used for note-paper, stamps, etc., and which do not extend across the frame—and mirrors mounted upon cases without drawers are not considered as making the structures bureaus.

4. CONVERTIBLE, BUREAU, TOP AND FRONT OPENING. Trunks opening both at the top and at the front. The top opening usually gives access to a tray, as in the ordinary trunk, and the front opening permits the drawers to be drawn out.

5. CONVERTIBLE, BUREAU, TOP AND FRONT OPENING, COMPARTMENT-TOP. The cover for the top opening is itself a receptacle.

6. CONVERTIBLE, BUREAU, FRONT-OPENING. Removal of a front cover or fastening permits the drawers to be drawn out.

Search Class—

190—BAGGAGE, subclass 4, Convertible, Bureau, Top and front opening.

7. CONVERTIBLE, BUREAU, FRONT-OPENING, COMPARTMENT-FRONT. The closure of the front opening is itself a receptacle.

8. CONVERTIBLE, CHAIR. The trunk is convertible into a chair or seat.

9. CONVERTIBLE, SHELVED. The trunk is provided with partitions, which are available in the converted position as shelves.

10. CONVERTIBLE, SHELVED, DESK-FLAP. In addition to the shelves there is a flap for writing use.

11. CONVERTIBLE, DESK OR TABLE. The trunk in its changed position is suited for use as a desk or table.

Search Class—

190—BAGGAGE, subclass 10, Convertible, Shelved, Desk-flap.

12. CONVERTIBLE, DESK OR TABLE, CAMP-KITS. Camp-kits are included here when they are in the form of trunks or traveling-bags adapted to carry supplies or baggage and are convertible into tables.

Note.—Camp-kits in the form of convertible lunch-boxes, chairs, etc., but not containing the features of the above definition, are classified with these articles.

13. CONVERTIBLE, WARDROBE. In the changed position of the trunk a space is left within which clothing can be suspended.

14. CONVERTIBLE, WARDROBE, EXTENSIBLE. These are constructions by which increased height is gained.

15. CONVERTIBLE, WARDROBE, EXTENSIBLE, TELESCOPIC. The desirable height of the space is secured by extending parts which slide one within the other.

Search Class—

190—BAGGAGE, subclasses 22, Trunks, Extensible and sectional, Telescopic, and 45, Traveling-bags, Extensible, Telescopic.

16. SAMPLE-CASES. The cases are trunk or traveling-bag structures having features fitting them for commercial travelers' use. These features are usually the construction of the trays to hold the line of articles to be carried and disposition of trays to display the contents.

CLASS 190—Continued.

Search Class—

217—WOODEN RECEPTACLES, subclasses 8, Boxes, Compartment, Folding, and 9, Boxes, Compartment, Folding, Display,

17. SAMPLE-CASES, LINK-SUPPORTED TRAY. The trays are held in display position by links.

Search Class—

190—BAGGAGE, subclasses 30, Trunks, Tray movers and supporters, Lid-operated movement, and 34, Trunks, Tray movers and supporters, Link connections and props.

18. ABOLISHED.

19. TRUNKS. Transportation receptacles of somewhat larger size than traveling-bags characterized generally by box shape and the location of the handles at opposite ends.

20. TRUNKS, CIRCULAR-END. The end is circular in section to permit rolling upon its edge without jar. The form is generally that of a cylinder or barrel.

21. TRUNKS, EXTENSIBLE AND SECTIONAL. The trunks can be increased in capacity. This is usually accomplished by releasing telescoped or folded compartments or walls or by adding independent receptacles.

Search Classes—

190—BAGGAGE, subclass 14, Convertible, Wardrobe, Extensible.

217—WOODEN RECEPTACLES, subclasses 12, Boxes, Knockdown; 14, Boxes, Knockdown, Folding, Horizontal and vertical pivot; 15, Boxes, Knockdown, Folding, Horizontal-pivot; 43, Boxes, Crates, Knockdown; 45, Boxes, Crates, Knockdown, Sectional, and 47, Boxes, Crates, Knockdown, Folding, Horizontal-pivot.

220—METALLIC SHIPPING AND STORING VESSELS, subclass 52, Buckets, Lunch, Compartment, Nesting, Sectional.

22. TRUNKS, EXTENSIBLE AND SECTIONAL, TELESCOPIC. The increased capacity is obtained by drawing the telescoping member of one section out from the other section.

Search Class—

190—BAGGAGE, subclasses 15, Convertible, Wardrobe, Extensible, Telescopic; 45, Traveling-bags, Extensible, Telescopic; 46, Traveling-bags, Extensible, Telescopic, Auxiliary opening, and 47, Traveling-bags, Extensible, Telescopic, Rack-fastener

23. TRUNKS, WALL. Trunks arranged to open while resting against the wall.

Note.—Hinges adapted for wall trunks are classified in class 16, BUILDERS' HARDWARE, subclass 104, Hinges, Box.

24. TRUNKS, FRAMES AND INTERIOR BRACES. Constructions of the body of the trunk when the invention is not in the material alone. Under "interior braces" are included brackets or strips upon the inside of the trunk to support the tray when the trunk is closed.

Note.—The several subclasses of tray movers and supporters show supports for the tray in its position within the closed trunk.

25. TRUNKS, REINFORCING-STRIPS. Strip and slat fastenings with the exterior strengthening-bands which they hold.

Search Class—

190—BAGGAGE, subclass 24, Trunks, Frames and interior braces.

26. TRUNKS, PROTECTING-HARNESS. The harness is so arranged as to protect the trunk from jar or injury, while it also keeps the trunk closed.

27. TRUNKS, HARNESS. Combinations of straps suitable for securing trunks in their closed position. Single straps are included when they are attached to the trunk or when modification of the trunk to accommodate them enters into the invention. Attached fasteners are included when they fasten the strap surrounding the trunk.

Search Classes—

190—BAGGAGE, subclass 26, Trunks, Protecting-harness.

24—BUCKLES, BUTTONS, CLASPS, Etc., subclasses 140, Packet-holders; 24, Bale and package ties, Strap-tighteners; 68, Strap-tighteners, and subclasses thereunder.

28. TRUNKS, VALANCES. Where the trunk opens, the edges of the one part are usually extended in the form of strips to overlap the edges of the other part in order to relieve the hinges and fastenings from side strain and to protect the contents from the elements. These overlapping parts are called "valances."

29. TRUNKS, TRAY MOVERS AND SUPPORTERS. Constructions whose object is the lifting or shifting of the tray from the position which it occupies when the trunk is closed into another position permitting easier access to the trunk-body or to the tray or which support or retain the tray in that other position.

30. TRUNKS, TRAY MOVERS AND SUPPORTERS, LID-OPERATED MOVEMENT. The tray is moved by the action of the lid.

31. TRUNKS, TRAY MOVERS AND SUPPORTERS PIVOTED-TRAY. The tray turns upon a pivot.

CLASS 190—Continued.

32. TRUNKS, TRAY MOVERS AND SUPPORTERS, PIVOTED-TRAY, VERTICAL-PIVOT. The tray moves in a horizontal plane upon its pivot. It usually has some vertical motion along the pivot also.

33. TRUNKS, TRAY MOVERS AND SUPPORTERS, SLIDING-TRAY. The tray slides upon a track in approximately a horizontal plane.

34. TRUNKS, TRAY MOVERS AND SUPPORTERS, LINK CONNECTIONS AND PROPS. Arms ordinarily pivoted are here used directly to operate or support the tray.

Search Class—

190—BAGGAGE, subclasses 17, Sample-cases, link-supported tray, and 30, Trunks, Tray movers and supporters, Lid-operated movement.

35. TRUNKS, TRAYS. Inventions relating to the tray, except such as refer to its movement or support.

Note.—Inventions in supports for the tray in the closed position of the trunk are found in this class, subclass 24, Trunks, Frames and interior braces. Inventions in mechanism for moving the tray or in supporting it in a different position from that occupied by it when the trunk is closed are found in this class, subclass 29, Trunks, Tray movers and supporters, and in the subclasses thereunder.

Search Class—

190—BAGGAGE, subclasses 19, Trunks; 34, Trunks, Tray movers and supporters, Link connections and props.

36. TRUNKS, FOLLOWERS. Adjustable partitions insertible or movable after the contents is in place to compress or retain it. The follower is sometimes in the form of a tray. It is nevertheless classified here unless there is invention in the tray itself.

Search Class—

217—WOODEN RECEPTACLES, subclasses 64, Boxes, Followers, and 86, Barrels, Followers.

37. TRUNKS, CORNER SHIELDS AND BUFFERS. Protections for the corners of the trunk.

Note.—Structures which are mere joints applicable to general wood construction are found in class 20, WOODEN BUILDINGS, subclass 92, Splices and joints.

Stiffeners and braces for box-joints are classified in class 217, WOODEN RECEPTACLES, subclass 69, Boxes, Stays, and the two subclasses thereunder.

Corner-shields in combination with casters are classified in class 16, BUILDERS' HARDWARE, subclass 4, Casters, unless some other trunk feature enters into the combination.

Search Class—

190—BAGGAGE, subclasses 23, Trunks, Wall; 25, Trunks, Reinforcing-strips, and 26, Trunks, Protecting-harness.

38. TRUNKS, SUPPORTING DEVICES. Legs and other structures for bearing the weight of the trunk.

Note.—Handles of strap form are classified in this class, subclass 39, Trunks, Handles. Trunk-handles of other types are classified in class 16, BUILDERS' HARDWARE, subclass 10, Handles. Casters are classified in class 16, BUILDERS' HARDWARE, subclass 4, Casters.

Search Class—

190—BAGGAGE, subclass 20, Trunks, Circular-end.

39. TRUNKS, HANDLES. Strap-handles and the fastenings therefor.

Note.—Handles suitable for trunk use will be found in class 16, BUILDERS' HARDWARE, subclasses 10, Handles, and 103, Handles, Coffin.

40. TRUNKS, MATERIALS. "Material" here includes corrugations, combinations of layers, and other modifications of what might be called "raw materials" to suit them for use in the trunk-body generally.

Search Classes—

190—BAGGAGE, subclasses 24, Trunks, Frames and interior braces, and 53, Traveling-bags, Materials and patterns.

217—WOODEN RECEPTACLES, subclass 1, Bent.

41. TRAVELING-BAGS. These bag, called also "grips," "telescopes," "valises," "portmanteaus," and "satchels," are usually distinguished from trunks both by their size and by arrangement of the handle or handles, so that each bag can be carried in one hand. They lack the display features of sample-cases.

Search Class—

224—PACKAGE AND ARTICLE CARRIERS, subclasses 44, Saddle-bags, Traveling-bag, and 47, Hand, Traveling-bag.

42. TRAVELING-BAGS, COMBINED. Structures used as traveling-bags at the same time that they serve another purpose.

43. TRAVELING-BAGS, FRAMELESS AND FOLDING. The body of the bag is either entirely without stiffening or has this stiffening so arranged that the bag can be folded or rolled into smaller compass, as when not in use.

Search Classes—

150—CLOTH, LEATHER, AND RUBBER RECEPTACLES, subclass 52, Covers and Cases.

229—PAPER RECEPTACLES, subclass 54, Bags, Satchel.

44. TRAVELING-BAGS, EXTENSIBLE. The capacity of the bag is capable of variation to hold in one position more than in another position.

CLASS 190—Continued.

Search Class—

190—BAGGAGE, subclass 21, Trunks, Extensible and sectional.

45. TRAVELING-BAGS, EXTENSIBLE, TELESCOPIC. The bag is made of several sections which slide one within another.

Search Class—

190—BAGGAGE, subclass 22, Trunks, Extensible and sectional, Telescopic.

46. TRAVELING-BAGS, EXTENSIBLE, TELESCOPIC, AUXILIARY OPENING. There is an opening other than the one available by separation of the sections.

47. TRAVELING-BAGS, EXTENSIBLE, TELESCOPIC, RACK-FASTENER. A rack or, more usually, a pair of racks upon one of the telescoping members are held in adjustable positions by grips, pawls, or other catches upon another of the telescoping members.

Search Class—

190—BAGGAGE, subclass 22, Trunks, Extensible and sectional, Telescopic.

48. TRAVELING-BAGS, TOP-OPENING. Bags opening at the top except such as are pivoted below the top at or near the vertical medial line. When so pivoted, they are still classified here if they do not spread the sides in opening.

49. TRAVELING-BAGS, FRAMES. Structures that give rigidity to the edges or body of the bag or which guide it in opening or closing. Shoes and other corner-fittings are also included.

Search Class—

190—BAGGAGE, subclass 48, Traveling-bags, Top-opening.

50. TRAVELING-BAGS, FRAMES, STAYS. Stiffeners and braces for the joints of the bag structure. They sometimes also make the joint.

Search Classes—

20—WOODEN BUILDINGS, subclass 92, Splices and joints.

217—WOODEN RECEPTACLES, subclass 69, Boxes, Stays.

51. TRAVELING-BAGS, COMPARTMENTS AND PARTITIONS. Pockets are included as compartments. The title is otherwise self-explanatory.

Note.—Where the construction is for the purpose of displaying the contents, the classification is in this class, subclass 16, Sample-cases.

52. TRAVELING-BAGS, COMPARTMENTS AND PARTITIONS, EXTERIOR AND AUXILIARY. Distinguished by an opening separate and distinct from that to the body of the bag.

53. TRAVELING-BAGS, MATERIALS AND PATTERNS. Inventions in the covering material and lining and in the shape or arrangement of the blanks which compose them.

Search Class—

190—BAGGAGE, subclass 40, Trunks, Materials.

54. TRAVELING-BAGS, FRAME AND BAG LEATHER JOINTS. The leather or other covering is fastened to the frame.

Search Class—

190—BAGGAGE, subclass 49, Traveling-bags, Frames.

55. TRAVELING-BAGS, BAG-FASTENING HANDLES. There is a combination between the handle and the catch or clasp by which the bag is held closed.

56. TRAVELING-BAGS, LOCK-PLATE HANDLE-FASTENINGS. Either the lock-plate itself or the parts which hold the lock-plate hold also or are combined with the link ends of the handle.

57. TRAVELING-BAGS, HANDLES. The title is self-explanatory.

Search Class—

224—PACKAGE AND ARTICLE CARRIERS, subclass 45, Hand, and subclasses thereunder.

58. TRAVELING-BAGS, HANDLES, FASTENERS. Means of securing the handle to the bag and modifications of the end of the handle to adapt it to the securing means.

Search Class—

190—BAGGAGE, subclasses 56, Traveling-bags, Lock-plate handle-fastenings, and 57, Traveling-bags, Handles.

59. TRAVELING-BAGS, STRAP-LOOP FASTENERS. Traveling bags having a loop for retaining the strap fastener in place.

Search Class—

224—PACKAGES AND ARTICLES CARRIERS, subclass 45, Hand, and subclasses thereunder.

60. TRAVELING-BAGS, ARTICLE-ATTACHERS. Means whereby articles or packages may be secured to the exterior of a traveling bag.

61. TRAVELING-BAGS, SAFETY-ATTACHERS. Means for securing the bag to the car-seat or to another like fixed object to protect against theft.

CLASS 194.—CHECK-CONTROLLED APPARATUS.

DEFINITIONS.

Class.

This class includes patents which contain any claim for the check-controlled device or for the combination of such device with the apparatus or machine to which it is applied or for any structure of that apparatus which would be useful only in a check-controlled device.

The term "check" includes coins and substitutes thereof which have analogous function.

Note.—Searches broadly for any particular art should be made not only in all subclasses having titles corresponding to such art, but also in the various miscellaneous subclasses of each group based on structure.

Subclasses.

1. MISCELLANEOUS. Check-controlled apparatus not classifiable in any other subclass.
2. MISCELLANEOUS, ARTICLE-DELIVERY. Apparatus for delivering articles of merchandise and not classifiable in any other subclass.
3. MISCELLANEOUS, FLUID-DELIVERY. Apparatus for delivering air, gas, water, or other fluid and not classifiable in any other subclass.
4. ANOMALOUS CHECK. The check is not a coin or other flat circular plate.
5. ANOMALOUS CHECK, FLUID-DELIVERY. The device uses an anomalous check and delivers air, gas, water, or other fluid.
6. CHECK IN CIRCUIT. The check becomes a bridge or plug through which the current passes.
7. CHECKS IN CIRCUIT, ARTICLE-DELIVERY. The current traverses the check, the apparatus delivering an article of merchandise.
8. CHECK IN CIRCUIT, TELEPHONES. The current traverses the check inserted as toll for the use of a telephone.
9. CHECK-OPERATED SWITCH. The check operates by its weight or thrust an electric switch. The check does not place mechanism in such a condition that the switch may be subsequently closed, but is an active agent in the operation thereof.
10. CHECK-OPERATED SWITCH, ARTICLE-DELIVERY. An article-delivery device is actuated by the closing of an electric switch operated by the check.
11. CHECK-OPERATED SWITCH, ELECTRIC METERS. A switch is closed by the operation of the check inserted as payment for electricity passing through an electric meter.
12. CHECK-OPERATED SWITCH, EXHIBITORS. An electric switch operated by the check controls a device for exhibiting pictures, advertisements, automaton, etc.
13. CHECK-OPERATED SWITCH, FLUID-DELIVERY. An electric switch operated by the check causes the delivery of air, gas, water, or other fluid.
14. CHECK-OPERATED SWITCH, INDUCTION-COILS. An electric switch operated by the check causes an induction-coil to administer electricity to persons.
15. CHECK-OPERATED SWITCH, PHONOGRAPHS. An electric switch is operated by the check to place in operative condition a phonograph, gramophone, or other device having the same general function.
16. CHECK-OPERATED SWITCH, TELEPHONES. An electric switch is operated by the check inserted as toll for the use of a telephone.
17. LOCK-RELEASING. The check releases a locking device which normally prevents the movement of some mechanism. This subclass includes all lock-releasing mechanism not released by the gravity or the thrust of the check.
18. LOCK-RELEASING, GRAVITY. The gravity of the check operates the locking mechanism.
19. LOCK-RELEASING, GRAVITY, FORWARDLY-TURNING RELEASED PART. The gravity of the check releases a part which always turns forward. Such part does not turn backward to be relocked, as in subclass Lock-releasing, gravity, reset turning released part, and its subordinate subclasses.

CLASS 194—Continued.

20. LOCK-RELEASING, GRAVITY, FORWARDLY-TURNING RELEASED PART, MEASURING INSTRUMENTS. A measuring instrument is controlled by the gravity of the check which releases a turning part having no retrograde movement in order to be relocked. Here are placed electric shocking-machines, electric meters, strength-testers, and the like.
21. LOCK-RELEASING, GRAVITY, FORWARDLY-TURNING RELEASED PART, MEASURING INSTRUMENTS, SCALES. Weighing devices controlled by the weight of the check which releases a turning part having no retrograde movement in order to be relocked.
22. LOCK-RELEASING, GRAVITY, FORWARDLY-TURNING RELEASED PART, ARTICLE-DELIVERY. Miscellaneous subclass of article-delivery devices controlled by the weight of the check which releases a turning part having no retrograde movement in order to be relocked.
23. LOCK-RELEASING, GRAVITY, FORWARDLY-TURNING RELEASED PART, ARTICLE-DELIVERY, CHANCE. The delivery of an article is governed by a chance device controlled by the weight of the check which releases a turning part having no retrograde movement in order to be relocked.
24. LOCK-RELEASING, GRAVITY, FORWARDLY-TURNING RELEASED PART, ARTICLE-DELIVERY, ENDLESS CARRIER. The article is delivered by an endless carrier, as a belt or drum, controlled by the weight of the check which releases a turning part having no retrograde movement in order to be relocked.
25. LOCK-RELEASING, GRAVITY, FORWARDLY-TURNING RELEASED PART, ARTICLE-DELIVERY, ENDLESS CARRIER, MAGAZINE. The article is delivered by an endless carrier, as a belt or drum, which is fed from a magazine, the mechanism being controlled by the weight of the check which releases a turning part having no retrograde movement in order to be relocked.
26. LOCK-RELEASING, GRAVITY, FORWARDLY-TURNING RELEASED PART, ARTICLE-DELIVERY, ROTARY FEED. The article is fed by a rotary device which does not carry the article around a portion of travel, as is the case in the last two subclasses above defined, the mechanism being controlled by the weight of the check which releases a turning part having no retrograde movement in order to be relocked.
27. LOCK-RELEASING, GRAVITY, FORWARDLY-TURNING RELEASED PART, ARTICLE-DELIVERY, SLIDING PUSHER. The article is delivered by a sliding device by which it is pushed. The mechanism is controlled by the weight of the check which releases a turning part having no retrograde movement in order to be relocked.
Note.—Pivoted pushers are placed under subclass 22, Lock-releasing, Gravity, Forwardly-turning released part, Article-delivery, and rotating flat carriers under subclasses 24, Lock-releasing, Gravity, Forwardly-turning released part, Article-delivery, Endless carrier, and 25, Lock-releasing, Gravity, Forwardly-turning released part, Article-delivery, Endless carrier, Magazine, in this class.
28. LOCK-RELEASING, GRAVITY, FORWARDLY-TURNING RELEASED PART, EXHIBITORS. A device for exhibiting pictures, advertisements, automaton, etc., is controlled by the weight of the check which releases a turning part having no retrograde movement in order to be relocked.
29. LOCK-RELEASING, GRAVITY, FORWARDLY-TURNING RELEASED PART, FLUID-DELIVERY. A device which delivers air, gas, water, or other fluid is controlled by the weight of the check which releases a turning part having no retrograde movement in order to be relocked.
30. LOCK-RELEASING, GRAVITY, FORWARDLY-TURNING RELEASED PART, GAME APPARATUS. A game apparatus is controlled by the weight of the check which releases a turning part having no retrograde movement in order to be relocked.
31. LOCK-RELEASING, GRAVITY, FORWARDLY-TURNING RELEASED PART, PHONOGRAPHS. A phonograph, gramophone, or device having the same general function is controlled by the weight of the check which releases a turning part having no retrograde movement in order to be relocked.
32. LOCK-RELEASING, GRAVITY, RECIPROCATING RELEASED PART. The gravity of the check releases a reciprocating part. Devices that are pivoted or swinging are not regarded as reciprocating.

CLASS 194—Continued.

33. LOCK-RELEASING, GRAVITY, RECIPROCATING RELEASED PART, MEASURING INSTRUMENTS. The weight of the check releases a reciprocating part of a measuring instrument, as electric meters, electric shocking devices, lung-testers, and the like.
34. LOCK-RELEASING, GRAVITY, RECIPROCATING RELEASED PART, MEASURING INSTRUMENTS, PULL-TESTERS. Devices which measure the force exerted by a pull and controlled by the weight of the check which releases a reciprocating part.
35. LOCK-RELEASING, GRAVITY, RECIPROCATING RELEASED PART, MEASURING INSTRUMENTS, SCALES. Devices which weigh and are controlled by the weight of the check which releases a reciprocating part.
36. LOCK-RELEASING, GRAVITY, RECIPROCATING RELEASED PART, MEASURING INSTRUMENTS, STRIKE-TESTERS. Devices which measure the force of a blow of the fist, foot, hammer, etc., and are controlled by the weight of the check which releases a reciprocating part.
37. LOCK-RELEASING, GRAVITY, RECIPROCATING RELEASED PART, ARTICLE-DELIVERY. An article is delivered by a mechanism controlled by the weight of the check which releases a reciprocating part.
38. LOCK-RELEASING, GRAVITY, RECIPROCATING RELEASED PART, ARTICLE-DELIVERY, ENDLESS CARRIER. The article is delivered by an endless carrier, as a drum or belt, controlled by the weight of the check which releases a reciprocating part.
39. LOCK-RELEASING, GRAVITY, RECIPROCATING RELEASED PART, ARTICLE-DELIVERY, SLIDING PUSHER. A sliding device pushes out the article and is controlled by the weight of the check which releases a reciprocating part.
Note.—A pivoted or turning device is not regarded as sliding. Such devices are in subclass 37, Lock-releasing, Gravity, Reciprocating released part, in this class.
40. LOCK-RELEASING, GRAVITY, RECIPROCATING RELEASED PART, ARTICLE-SECURING STANDS. Devices for securing temporarily articles such as bicycles, umbrellas, hats, and coats, such devices being controlled by the weight of the check which releases a reciprocating part.
41. LOCK-RELEASING, GRAVITY, RECIPROCATING RELEASED PART, CHANCE AND GAME APPARATUS. A chance or game apparatus is controlled by the weight of the check which releases a reciprocating part.
42. LOCK-RELEASING, GRAVITY, RECIPROCATING RELEASED PART, EXHIBITORS. A device for exhibiting pictures, advertisements, automaton, and the like is controlled by the weight of the check which releases a reciprocating part.
43. LOCK-RELEASING, GRAVITY, RECIPROCATING RELEASED PART, FLUID-DELIVERY. A device for the delivery of air, gas, water, or other fluid is controlled by the weight of the check which releases a reciprocating part.
44. LOCK-RELEASING, GRAVITY, RECIPROCATING RELEASED PART, TELEPHONES. A reciprocating device is released by the weight of the check inserted as toll for the use of a telephone.
45. LOCK-RELEASING, GRAVITY, RESET TURNING RELEASED PART. A turning part is released by the weight of a check and afterward reset—that is, relocked—by being returned to its normal position.
46. LOCK-RELEASING, GRAVITY, RESET TURNING RELEASED PART, MEASURING INSTRUMENTS. A measuring instrument is controlled by the weight of the check which releases a turning part reset by a retrograde movement. This subclass includes such devices as electric meters, electric shocking-machines, and strength-testers.
47. LOCK-RELEASING, GRAVITY, RESET TURNING RELEASED PART, MEASURING INSTRUMENTS, SCALES. A weighing mechanism is controlled by the weight of the check which releases a turning part reset by a retrograde movement.
48. LOCK-RELEASING, GRAVITY, RESET TURNING RELEASED PART, ARTICLE-DELIVERY. An article-delivery device is controlled by the weight of the check which releases a turning part reset by a retrograde movement.
49. LOCK-RELEASING, GRAVITY, RESET TURNING RELEASED PART, ARTICLE-SECURING STANDS. A device for securing bicycles, umbrellas, hats, coats, and the like is controlled by the weight of the check which releases a turning part reset by a retrograde movement.
50. LOCK-RELEASING, GRAVITY, RESET TURNING RELEASED PART, CHANCE AND GAME APPARATUS. A chance or game apparatus is controlled by the weight of the check which releases a turning part reset by a retrograde movement.

CLASS 194—Continued.

51. LOCK-RELEASING, GRAVITY, RESET TURNING RELEASED PART, DOOR AND LID LOCKS. A door or lid is controlled by the weight of the check which releases a turning part reset by a retrograde movement.
52. LOCK-RELEASING, GRAVITY, RESET TURNING RELEASED PART, EXHIBITORS. A device for exhibiting pictures, advertisements, automaton, and the like is controlled by the weight of the check which releases a turning part reset by a retrograde movement.
53. LOCK-RELEASING, GRAVITY, RESET TURNING RELEASED PART, FLUID-DELIVERY. A device for delivering air, gas, water, or other fluid is controlled by the weight of the check which releases a turning part reset by a retrograde movement.
- LOCK-RELEASING, THRUST. Devices having a detent or locking device releasable by the thrust or push of the check. The check acts as a connection or link, so that when the check is forced along it will move the detent out of locking position. In some instances the checks are pushed by the fingers. The check may move to thrust the detent out of locking position, or the detent may be thrust out of such position by moving against the check.
54. LOCK-RELEASING, THRUST, PIVOTED DETENT. The thrust or push of the check operates a pivoted detent or unlocking device. In this subclass the checks are pushed by the fingers or are stationary.
Search Class—
194—CHECK-CONTROLLED APPARATUS, proper subclasses under Connectors, Check, where the check-driven element is equivalent or analogous to a detent, or where the detent claimed is analogous or equivalent to a part not a detent.
55. LOCK-RELEASING, THRUST, PIVOTED DETENT, RECIPROCATING COIN-MOVER. A reciprocating device directly engages and moves the coin to unlock a pivoted detent. Swinging or pivoted devices are not regarded as reciprocating. They are under subclass Lock-releasing, thrust, pivoted detent, turning coin-mover, and its subordinate subclasses.
Search Class—
194—CHECK-CONTROLLED APPARATUS, subclasses 74 et seq., under Connectors, Check, where the detent claimed is analogous or equivalent to a part not a detent.
56. LOCK-RELEASING, THRUST, PIVOTED DETENT, RECIPROCATING COIN-MOVER, MEASURING INSTRUMENTS. A measuring instrument—such as a dynamometer, spirometer, electric shocking-machine, or an electric meter—is controlled by a reciprocating part which directly engages and moves the coin to unlock a pivoted detent.
Search Class—
194—CHECK-CONTROLLED APPARATUS, subclasses 74 et seq., under Connectors, Check, where the detent claimed is analogous or equivalent to a part not a detent.
57. LOCK-RELEASING, THRUST, PIVOTED DETENT, RECIPROCATING COIN-MOVER, ARTICLE-DELIVERY. An article-delivery device is controlled by a reciprocating part which directly engages and moves the coin to unlock a pivoted detent.
Search Class—
194—CHECK-CONTROLLED APPARATUS, subclasses 74 et seq., under Connectors, Check, where the detent claimed is analogous or equivalent to a part not a detent.
58. LOCK-RELEASING, THRUST, PIVOTED DETENT, RECIPROCATING COIN-MOVER, ARTICLE-DELIVERY, SLIDING PUSHER. A device that has a sliding pusher to deliver an article has a reciprocating pusher which directly engages and moves the coin to unlock a pivoted detent.
Search Class—
194—CHECK-CONTROLLED APPARATUS, subclasses 74 et seq., under Connectors, Check, where the detent claimed is analogous or equivalent to a part not a detent.
59. LOCK-RELEASING, THRUST, PIVOTED DETENT, RECIPROCATING COIN-MOVER, DOOR AND LID LOCKS. A door or lid is controlled by a pivoted releasing device operated by a coin directly engaged by a reciprocating pusher.
Search Class—
194—CHECK-CONTROLLED APPARATUS, subclasses 74 et seq., under Connectors, Check, where the detent claimed is analogous or equivalent to a part not a detent.
60. LOCK-RELEASING, THRUST, PIVOTED DETENT, RECIPROCATING COIN-MOVER, FLUID-DELIVERY. A device for delivering air, gas, water, or other fluid is controlled by a pivoted releasing means operated by a coin directly engaged by a reciprocating pusher.
Search Class—
194—CHECK-CONTROLLED APPARATUS, subclasses 74 et seq., under Connectors, Check, where the detent claimed is analogous or equivalent to a part not a detent.
61. LOCK-RELEASING, THRUST, PIVOTED DETENT, TURNING COIN-MOVER. A turning device directly engages and moves a coin to unlock a pivoted detent.

CLASS 194—Continued.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclasses 74 et seq., under Connectors, Check, where the detent claimed is analogous or equivalent to a part not a detent.

62. LOCK-RELEASING, THRUST, PIVOTED DETENT, TURNING COIN-MOVER, MEASURING INSTRUMENTS. A measuring instrument such as a dynamometer, spirometer, electric meter, or an electric shocking-machine is controlled by a turning part which directly engages and moves the coin to unlock a pivoted detent.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclasses 74 et seq., under Connectors, Check, where the detent claimed is analogous or equivalent to a part not a detent.

63. LOCK-RELEASING, THRUST, PIVOTED DETENT, TURNING COIN-MOVER, ARTICLE-DELIVERY. An article-delivery device is controlled by a turning part which directly engages and moves the coin to unlock a pivoted detent.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclasses 74 et seq., under Connectors, Check, where the detent claimed is analogous or equivalent to a part not a detent.

64. LOCK-RELEASING, THRUST, PIVOTED DETENT, TURNING COIN-MOVER, ARTICLE-SECURING STANDS. A device for temporarily securing bicycles, umbrellas, hats, coats, and the like is controlled by a turning part which directly engages and moves the coin to unlock a pivoted detent.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclasses 74 et seq., under Connectors, Check, where the detent claimed is analogous or equivalent to a part not a detent.

65. LOCK-RELEASING, THRUST, PIVOTED DETENT, TURNING COIN-MOVER, DOOR AND LID LOCKS. A door or lid is controlled by a turning part which directly engages and moves the coin to unlock a pivoted detent.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclasses 74 et seq., under Connectors, Check, where the detent claimed is analogous or equivalent to a part not a detent.

66. LOCK-RELEASING, THRUST, PIVOTED DETENT, TURNING COIN-MOVER, FLUID-DELIVERY. A device for delivering air, gas, water, or other fluid is controlled by a turning part which directly engages and moves the coin to unlock a pivoted detent.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclasses 74 et seq., under Connectors, Check, where the detent claimed is analogous or equivalent to a part not a detent.

67. LOCK-RELEASING, THRUST, RECIPROCATING DETENT. The thrust or push of the check operates a reciprocating detent or unlocking device. In this subclass the checks are pushed by the finger or are stationary.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclasses 74 et seq., under Connectors, Check, where the detent claimed is analogous or equivalent to a part not a detent.

68. LOCK-RELEASING THRUST, RECIPROCATING DETENT, ARTICLE-DELIVERY. An article-delivery device is controlled by a reciprocating detent which is unlocked by the thrust or push of the check. The checks are pushed by the fingers or are stationary.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclasses 74 et seq., under Connectors, Check, where the detent claimed is analogous or equivalent to a part not a detent.

69. LOCK-RELEASING, THRUST, RECIPROCATING DETENT, RECIPROCATING COIN-MOVER. A reciprocating device directly engages and moves a coin which unlocks a reciprocating detent.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclasses 74 et seq., under Connectors, Check, where the detent claimed is analogous or equivalent to a part not a detent.

70. LOCK-RELEASING, THRUST, RECIPROCATING DETENT, TURNING COIN-MOVER. A turning device directly engages and moves a coin which unlocks a reciprocating detent.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclasses 74 et seq., under Connectors, Check, where the detent claimed is analogous or equivalent to a part not a detent.

71. LOCK-RELEASING, THRUST, PIVOTED DETENT, ARTICLE-DELIVERY. An article-delivery device is controlled by the thrust or push of a check which operates a pivoted detent. The checks are pushed by the fingers or are stationary.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclasses 74 et seq., under Connectors, Check, where the detent claimed is analogous or equivalent to a part not a detent.

72. CONNECTORS. The check operates or becomes a connector between normally disconnected parts. This subclass embraces those devices that operate a connector and do not depend upon the gravity of the coin or deliver an article.

CLASS 194—Continued.

73. CONNECTORS, GRAVITY. The gravity of the check operates a connector between disconnected parts.

CONNECTORS, CHECK. In this group the check is the connector between disconnected parts and transmits the pressure of its actuating means to another part not a detent or releasing device. Mechanisms employing checks to transmit motion therefrom to a detent are classified in subclasses under Lock releasing, Thrust, this class. In some instances the fingers are the means for driving the check.

Search Class—

194—CHECK-CONTROLLED APPARATUS, proper subclasses 54 et seq., under Lock-releasing, Thrust, where the check-driven element claimed is analogous or equivalent to a detent.

74. CONNECTORS, CHECK, RECIPROCATING AND TURNING PARTS. The check connects reciprocating and turning parts, neither operating a detent.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclasses 54 et seq., under Lock-releasing, Thrust, for detents actuated by the thrust of a check.

75. CONNECTORS, CHECK, RECIPROCATING AND TURNING PARTS, ARTICLE-DELIVERY. An article is delivered by a device wherein reciprocating and turning parts, neither operating a detent, are connected by the check.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclasses 54 et seq., under Lock-releasing, Thrust, where the check-driven element claimed is analogous or equivalent to a detent.

76. CONNECTORS, CHECK, RECIPROCATING AND TURNING PARTS, CHANCE AND GAME APPARATUS. A chance and game apparatus is controlled by a device wherein reciprocating and turning parts, neither operating a detent, are connected by the check.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclasses 54 et seq., under Lock-releasing, Thrust, where the check-driven element claimed is analogous or equivalent to a detent.

77. CONNECTORS, CHECK, RECIPROCATING AND TURNING PARTS, FLUID-DELIVERY. A mechanism which delivers air, gas, water, or other fluid is controlled by a device wherein reciprocating and turning parts, neither operating a detent, are connected by the check.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclasses 54 et seq., under Lock-releasing, Thrust, where the check-driven element claimed is analogous or equivalent to a detent.

78. CONNECTORS, CHECK, RECIPROCATING PARTS. The check connects a plurality of reciprocating parts, none operating a detent.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclasses 54 et seq., under Lock-releasing, Thrust, where the check-driven element claimed is analogous or equivalent to a detent.

79. CONNECTORS, CHECK, RECIPROCATING PARTS, ARTICLE-DELIVERY. An article is delivered by a device wherein the check connects a plurality of reciprocating parts, none operating a detent.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclasses 54 et seq., under Lock-releasing, Thrust, where the check-driven element claimed is analogous or equivalent to a detent.

80. CONNECTORS, CHECK, RECIPROCATING PARTS, ARTICLE-DELIVERY, SLIDING PUSHER. An article delivered by a sliding (not swinging) pusher is controlled by a device wherein the check connects a plurality of reciprocating parts, none operating a detent.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclasses 54 et seq., under Lock-releasing, Thrust, where the check-driven element claimed is analogous or equivalent to a detent.

81. CONNECTORS, CHECK, RECIPROCATING PARTS, CHANCE AND GAME APPARATUS. A chance or game apparatus is controlled by a device wherein the check connects a plurality of reciprocating parts, none operating a detent.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclasses 54 et seq., under Lock-releasing, Thrust, where the check-driven element claimed is analogous or equivalent to a detent.

82. CONNECTORS, CHECK, RECIPROCATING PARTS, FLUID-DELIVERY. A mechanism for the delivery of air, gas, water, or other fluid is controlled by a device wherein the check connects a plurality of reciprocating parts, none operating a detent.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclasses 54 et seq., under Lock-releasing, Thrust, where the check-driven element claimed is analogous or equivalent to a detent.

83. CONNECTORS, CHECK, TURNING PARTS. The check connects a plurality of turning parts, none operating a detent.

Search Class—

194—CHECK-CONTROLLED APPARATUS, proper subclasses 54 et seq., under Lock-releasing, Thrust, where the check-driven element claimed is analogous or equivalent to a detent.

CLASS 194—Continued.

84. CONNECTORS, CHECK, TURNING PARTS, CONCENTRIC. The check connects a plurality of parts having the same axis of motion. The parts may be telescopic or in the same longitudinal line. None of the parts operates a detent.

Search Class—

194—CHECK-CONTROLLED APPARATUS, proper subclasses 54 et seq. under Lock-releasing, Thrust, where the check-driven element claimed is analogous or equivalent to a detent.

85. CONNECTORS, CHECK, TURNING PARTS, CONCENTRIC, ARTICLE-DELIVERY. An article is delivered by a device wherein the check connects a plurality of concentric parts, none operating a detent.

Search Class—

194—CHECK-CONTROLLED APPARATUS, proper subclasses 54 et seq. under Lock-releasing, Thrust, where the check-driven element claimed is analogous or equivalent to a detent.

86. CONNECTORS, CHECK, TURNING PARTS, CONCENTRIC, CHANCE AND GAME APPARATUS. A chance or game apparatus is controlled by a device wherein the check connects a plurality of concentric parts, none operating a detent.

Search Class—

194—CHECK-CONTROLLED APPARATUS, proper subclasses 54 et seq. under Lock-releasing, Thrust, where the check-driven element claimed is analogous or equivalent to a detent.

87. CONNECTORS, CHECK, TURNING PARTS, CONCENTRIC, FLUID-DELIVERY. A mechanism delivering air, gas, water, or other fluid is controlled by a device wherein the check connects a plurality of concentric parts, none operating a detent.

Search Class—

194—CHECK-CONTROLLED APPARATUS, proper subclasses 54 et seq. under Lock-releasing, Thrust, where the check-driven element claimed is analogous or equivalent to a detent.

88. CONNECTORS, CHECK, TURNING PARTS, ARTICLE-DELIVERY. An article is delivered by a device wherein a check connects a plurality of turning non-concentric parts, none operating a detent.

Search Class—

194—CHECK-CONTROLLED APPARATUS, proper subclasses 54 et seq. under Lock-releasing, Thrust, where the check-driven element claimed is analogous or equivalent to a detent.

89. CONNECTORS, CHECK, TURNING PARTS, CHANCE AND GAME APPARATUS. A chance or game apparatus is controlled by a device wherein a check connects a plurality of turning non-concentric parts, none of the parts operating a detent.

Search Class—

194—CHECK-CONTROLLED APPARATUS, proper subclasses 54 et seq. under Lock-releasing, Thrust, where the check-driven element claimed is analogous or equivalent to a detent.

90. CONNECTORS, CHECK, TURNING PARTS, FLUID-DELIVERY. A mechanism delivering air, gas, water, or other fluid is controlled by a device wherein a check connects a plurality of turning non-concentric parts, none of the parts operating a detent.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclasses 54 et seq. under Lock-releasing, Thrust, where the check-driven element claimed is analogous or equivalent to a detent.

CLASS 194—Continued.

91. CONNECTORS, ARTICLE-DELIVERY. The check operates a connector between disconnected parts in order to make an article-delivery device operative.

92. LOCK-PREVENTING. The locking device is not normally in locking position, and any attempt to operate the mechanism in the absence of the check causes the locking means to seek a locking position.

93. LOCK-PREVENTING, ARTICLE-DELIVERY. An article is delivered by a mechanism whose locking device is not normally in locking position, and any attempt to operate the mechanism in the absence of the check causes the locking means to seek a locking position.

94. CHECK-ROTATED WHEEL. A wheel is rotated by the positive action of the check, but not as the result of some mechanism released or set by the check.

95. SHUTTER. The check controls the operation of a shutter controlling the admission of light.

96. CHECK-ENGAGED ALARM. The check engages or strikes an alarm, usually the signal of a telephone toll apparatus or a fraud-signal.

97. FRAUD-PREVENTIVES. Devices for preventing fraud against the apparatus.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclass 96, Check-engaged alarms, for alarms whose body or tongue is struck by the check, and subclasses 54 et seq. under Lock-releasing, Thrust, and 74 et seq. under Connectors, Check, where a pusher enters the opening in a washer.

98. FRAUD-PREVENTIVES, CHECK-EXHIBITORS. Devices for preventing fraud by having the check exposed for visual examination.

99. FRAUD-PREVENTIVES, COMBINED SIZE AND MATERIAL TESTERS. Devices for preventing fraud by rejecting checks of improper size and material.

100. FRAUD-PREVENTIVES, MATERIAL-TESTERS. Devices for preventing fraud by rejecting checks of improper material.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclass 99, Fraud-preventives, Combined size and material testers.

101. FRAUD-PREVENTIVES, MATERIAL-TESTERS, MAGNETS. Devices for preventing fraud by rejecting checks susceptible to magnetic attraction.

102. FRAUD-PREVENTIVES, SIZE-TESTER. Devices for preventing fraud by rejecting checks of improper size.

Search Class—

194—CHECK-CONTROLLED APPARATUS, subclass 99, Fraud-preventives, Combined size and material testers, and subclasses under Lock-releasing, Thrust, and under Connectors, Check, where the edge of the check is held between and gaged by the opposing ends of the check-pushed and the check-driven elements.

103. FRAUD-PREVENTIVES, WEIGHT-TESTERS. Devices for preventing fraud by rejecting checks of improper weight.

CLASS 201.—METAL-ORNAMENTING

DEFINITIONS.

Class.

This class includes machines and processes for ornamenting the surface of metal by means of mechanical impressions produced by means of dies, nurling-tools, stippling-tools, etc.

The ornamentation of metallic surfaces by enameling, inlaying, etching, etc., is to be found in class 41, ORNAMENTATION.

The ornamentation of metallic surfaces by cutting away a portion of the surface is to be found in class 159, ENGRAVING.

Subclasses.

1. MISCELLANEOUS. Miscellaneous machines and processes for ornamenting the surface of metal not classifiable elsewhere.

2. NURLING. Machines and processes for ornamenting the surface of metal by means of a rotary tool having a nurlled or ornamented surface, the work being carried by a rotary chuck or the tool having a rotary movement about the work as an axis, or vice versa.

Search Class—

90—GEAR-CUTTING, MILLING, AND PLANING, subclass 2, Gear-cutting, Intermeshing generator.

3. DIE-PRESSING. Machines and processes for impressing designs or letters upon the surface of metal by means of dies.

Note.—Machines having a series of dies representing the alphabet, with selecting means whereby any letter may be impressed upon a metal blank, are to be found in class 101, PRINTING, subclass 57, Hand-stamps, Check-punches.

Search Classes—

18—PLASTICS, subclass 19, Molding devices, Presses, Sheet-shaping.

113—SHEET-METAL WARE, MAKING, subclass 38, Die-shaping.

144—WOODWORKING, subclass 272, Wood-ornamenting, Embossing.

4. DIE-PRESSING, ROLLER-DIE. Machines in which metal is ornamented by being passed between rolls provided with impressing-dies.

Search Classes—

18—PLASTICS, subclass 10, Molding devices, Rolling, Sheets.

CLASS 201—Continued.

69—LEATHER MANUFACTURES, subclass 2, Machines, Cutting and impressing.

144—WOODWORKING, subclass 273, Wood-ornamenting, Embossing, Die-roller.

149—HIDES, SKINS, AND LEATHER, subclass 23, Apparatus, Rolling and embossing.

154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 30, Yielding fabric making, Corrugating and indenting.

5. DIE-PRESSING, ROLLER AND BED. Machines in which the metal is pressed against a flat bed by a roller, the die being carried by either the roller or the bed.

Search Classes—

18—PLASTICS, subclasses 10, Molding devices, Rolling, Sheets, and 11, Molding devices, Rolling, Compound.

144—WOODWORKING, subclass 272, Wood-ornamenting, Embossing.

149—HIDES, SKINS, AND LEATHER, subclass 23, Apparatus, Rolling and embossing.

6. DIE-PRESSING, DIES AND DIE-HOLDERS. Includes dies and die-holders used in die-presses for ornamenting the surface of metal.

Note.—Dies for shaping sheet metal into vessels in addition to ornamenting the same are found in class 113, SHEET-METAL WARE, MAKING, subclass 49, Die-shaping, Dies and die-holders.

Search Classes—

18—PLASTICS, subclass 44, Molding devices, Molds, Dies and matrices.

113—SHEET-METAL WARE, MAKING, subclass 49, Die-shaping, Dies and die-holders.

7. STIPLING, RECIPROCATING TOOL. Machines which ornament the surface of metal by means of a reciprocating stippling-tool. This subclass also includes hand-stippling tools.

8. STIPLING, ROTARY TOOL. Machines which ornament the surface of metal by means of a rotary stippling tool or brush.

Search Class—

15—BRUSHING AND SCRUBBING, subclass 32, Brush heads and faces, Metal-cleaning brushes for the structure of the brush.

CLASS 205.—METAL DRAWING.

DEFINITIONS.

Class.

This class includes instruments and processes for altering the form or area of the cross-section of metal rods, tubes, wire, and various other articles usually by drawing the same through a bottomless die of the desired outline or over a mandrel or other interior-shaping device. This class also contains machines, etc., for *welding by drawing*, for the reason that such machines are structurally similar to other drawing-machines and for the further reason that the same machine sometimes contains both welding-dies and dies for *reducing* the tube after the welding has been completed.

In a few cases the article is thrust through the die to prevent reduction of cross-section after it has passed the die. (See particularly subclass 4, Bars and tubes, By thrust.)

Machines which shape *within* a closed die are excluded from the class, such machines being found in class 78, METAL-FORGING AND WELDING; class 113, SHEET-METAL WARE, MAKING; class 207, PLASTIC METAL WORKING, and in suitable art classes in metal-working and in the working of other materials in a plastic state.

Machines for piercing billets will be found in class 78, METAL-FORGING AND WELDING, subclass 9, Billet-piercing, and the subclasses thereunder, and machines for cupping and producing closed-ended tubes from metal planchets will be found in class 113, SHEET-METAL WARE, MAKING, subclass 38, Die-shaping, and the subclasses thereunder.

Subclasses.

1. MISCELLANEOUS. Machines, etc., for drawing metal not classifiable in specific subclasses under the general class title.

2. PROCESSES. Miscellaneous processes for drawing metal not capable of classification under other subtitles in this class. No apparatus claims or patents are included.

Search Class—

205—METAL DRAWING, subclasses 8, Bars and tubes, Processes; 12, Tube-welding, Processes; 18, Wire, Covering, Processes, and 21, Wire, Processes.

3. BARS AND TUBES. Miscellaneous machines and devices for reducing or altering the form of the cross-section of bars and tubes by drawing them through suitable dies or by passing mandrels through the bore of the tubes.

Search Class—

205—METAL DRAWING, subclass 1, Miscellaneous.

4. BARS AND TUBES, BY THRUST. Machines and devices for reducing or altering the form of cross-section of bars and tubes by *pushing* or *thrusting* them through a die. This is usually to secure perfect uniformity in the cross-section of the finished article. (See the main-class definition.)

Search Class—

205—METAL DRAWING, subclass 1, Miscellaneous.

5. BARS AND TUBES, HYDRAULIC-DRIVE. Bar and tube drawing machines in which the tractive force is exerted on the article to be reduced by means of a suitable hydraulic cylinder, piston, and gripping device.

Search Classes—

205—METAL DRAWING, subclasses 1, Miscellaneous; 4, Bars and tubes, By thrust.

138—HYDRAULIC MOTORS, suitable subclasses for analogous driving mechanism.

6. BARS AND TUBES, SCREW-DRIVE. Bar and tube drawing machines in which the tractive force is exerted on the article by means of a relatively rotating screw and nut. The gripping device may be attached to either screw or nut.

7. BARS AND TUBES, BACKING-MANDREL. Tube-drawing machines in which the interior of the tube is supported or "backed" by a mandrel which may either remain stationary or move through the die with the tube. The subclass includes a few mandrels adapted for this purpose.

Search Class—

205—METAL DRAWING, subclasses 11, Tube-welding, Die and mandrel, and 28, Dies, Welding.

8. BARS AND TUBES, PROCESSES. Methods of preparing and reducing bars and tubes, the most prominent step of which method consists in drawing the articles through dies. Though apparatus is frequently shown, no apparatus claims are included.

Search Class—

205—METAL DRAWING, subclasses 2, Processes; 12, Tube-welding, Processes, and 21, Wire, Processes.

9. TUBE-WELDING. Machines and devices for forming tubes from strips or "skelps" by drawing them at a welding heat through dies adapted to fold the skelp longitudinally and weld together the abutting or overlapping edges.

Note.—This manner of *welding by drawing* is included in this class for the reasons that the cross-section is slightly reduced and that the same machine often comprehends a second die and drawing mechanism structurally very similar, the only function of which is to *reduce* the cross-section of the tube.

CLASS 205.—Continued.

10. TUBE-WELDING, Laterally-movable Draw-head. Tube-welding machines in which the skelp-drawing means, gripping appliance, or point of attachment for tag or tongs is movable laterally across the mouth of the furnace, so that each skelp may be drawn therefrom without interfering with others being heated. In some cases the welding-die has a similar movement; in others a series of dies is used.

11. TUBE-WELDING, Die and Mandrel. Tube-welding machines in which the interior of the tube at the welding-point is supported by a mandrel which coöperates with the outer die or welding-bell to effect the weld and prevent an internal ridge.

Search Class—

205—METAL DRAWING, subclasses 7, Bars and tubes, Backing-mandrel, and 28, Dies, Welding.

12. TUBE-WELDING, PROCESSES. Methods of making tubes by longitudinally folding a flat skelp and welding the juxtaposed edges. No apparatus is included.

13. WIRE, Multiple-Die. Machines for drawing wire in which the wire is reduced by drawing it through a series of dies in succession or in which a plurality of wires may be simultaneously reduced. In this particular subclass the dies are usually arranged side by side.

14. WIRE, Multiple-Die, Tandem. Wire-drawing machines in which a plurality of dies are arranged with their axes in substantial alignment, so that the wire may pass either directly or indirectly from one die to another to effect successive reductions. Compensating drawing drums or "blocks" may alternate with the dies.

Search Class—

205—METAL DRAWING, subclass 15, Wire, Multiple-die, Rotary.

15. WIRE, Multiple-Die, Rotary. Wire-drawing machines in which the dies are axially rotated while the wire is being drawn through them. The series of dies has usually a tandem arrangement.

16. WIRE. Machines and devices for manufacturing wire by drawing suitably-prepared rods through reducing-dies. As to size the line between bars and wire is not clearly defined; but the machines differ in that wire-drawing machines are adapted for drawing indefinite instead of limited lengths of material.

17. WIRE, COVERING. Apparatus for covering lengths of solid or tubular cores, and in a few cases cord, with a strip of sheet metal longitudinally folded and secured to the core by drawing both through a die.

Note.—For machines for covering wire with insulating material and tape search subclass 244, Machines for covering, in class 173, ELECTRICITY, CONDUCTORS.

Note.—For machines for "serving" or spirally winding cord and wire with twine search subclass 6, Covering cord, in class 28, CORDAGE.

Search Classes—

153—METAL-BENDING, subclass 1, Binding and covering.

242—WINDING AND REELING, subclass 7, Cylinder and conoid winding.

18. WIRE, COVERING, PROCESSES. Methods of covering wire with a strip of sheet metal, usually a metal differing from the wire core, by folding the covering-strip longitudinally and closing it upon the core by drawing.

19. WIRE, LUBRICATING. Compositions and apparatus for coating wire to prevent oxidation or to lubricate it while passing through the drawing-die. These compositions differ from ordinary lubricants in that they seldom or never contain true fats or oils and are often mere solutions of some salt which will prevent oxidation.

Note.—Miscellaneous lubricating compounds will be found in subclass 9, Lubricants, in class 87, OILS, FATS, AND GLUE.

20. WIRE, DRAWING-DRUMS. Rotating drums or "blocks" provided with gripping means for seizing the wire and usually comprehending driving means of sufficient strength to pull the wire through the die.

Note.—These devices differ from reels in class 242, WINDING AND REELING, subclass 78, Reels, Metal working, in that the sole function of the latter is to form coils of finished wire and are not provided with positive driving means of sufficient strength to reduce the cross-section of as well as reel the wire. Reels are also of a construction permitting the ready and sometimes positive disengagement of the finished coil.

21. WIRE, PROCESSES. Methods of chemically treating wire before passing it through the die, as well as miscellaneous methods of producing plated wire, wire of noncircular cross-section, by an act of drawing, etc. No apparatus included.

22. APPLIANCES. Miscellaneous devices for facilitating the drawing of bars, tubes, etc., such as grippers, chain-engaging devices, and the like.

CLASS 205—Continued.

23. **APPLIANCES, TAGS.** Rod-like extensions adapted to be welded, riveted, or otherwise secured to the end of the skelp and provided with means for engaging the draw-head of the bench.

24. **APPLIANCES, TONGS.** Movable-jaw grippers particularly designed to grasp and draw tube-skelps, wire, etc. They are usually provided with means of attachment to the draw-head or "block" of the drawing mechanism.

Search Classes—

7—**COMPOUND TOOLS**, subclasses 3, 4, and 5, under Type, Pliers; 39—**FENCES**, subclass 53, Fences, Wirestretchers, Grips; 80, **METAL ROLLING**, subclasses 43, Feeding; 44, Feeding, Tables, and the subclasses thereunder; and 51, Feeding, Guides and conductors; 81, **TOOLS**, subclasses 43 to 61, under Pliers and Tongs.

25. **DIE-HOLDERS.** Frames and other forms of support for metal-drawing dies, usually for the purpose of securing alignment or for holding in proper relative position the parts of a built-up die.

26. **DIES.** Miscellaneous dies for drawing bars, tubes, and wire or for bending and welding tube-skelps.

CLASS 205—Continued.**Search Class—**

205—**METAL DRAWING**, subclass 25, Die-holders.

27. **DIES, SKELPING.** Dies particularly designed for longitudinally folding tube-skelps preparatory to welding the same.

Search Classes—

205—**METAL DRAWING**, subclass 25, Die-holders..

153—**METAL-BENDING**, subclass 32, Curving and straightening.

28. **DIES, WELDING.** Dies designed for longitudinally welding tube-skelps. Many of them have a cooperating internal mandrel.

Search Class—

205—**METAL DRAWING**, subclasses 7, Bars and tubes, Backing-mandrel, and 25, Die-holders.

29. **DIES, WIRE.** Dies especially designed for reducing wire or for changing its form of cross-section.

Search Class—

205—**METAL DRAWING**, subclass 25, Die-holders.

CLASS 206.—SPECIAL RECEPTACLES AND PACKAGES.

DEFINITIONS.

Class.

This class includes receptacles in which the novelty depends upon the construction or arrangement of the receptacle to contain any specific article or sets of articles. Includes also as specific packages any article or sets of articles put up as a mercantile unit.

The line of division between this and the other receptacle classes lies in the fact that receptacles in this class are dependent for their novelty on their adaptation to the contained article or articles, while in the other receptacle classes the novelty is in the arrangement of the specific material to form a receptacle.

Subclasses.

1. RECEPTACLES. Containers which fall within the general class definition and are not properly classifiable in any of the following subclasses.

2. RECEPTACLES, ACID-PROOF. Receptacles constructed for holding acid contents.

Note.—If the construction is of necessity limited to use as an electric-battery vessel by the inclusion of parts necessary and special to batteries, the patent is classifiable in class 204, ELECTROCHEMISTRY, subclass 53, Batteries, Vessels and supply devices.

Note.—Bags or sacks chemically treated to permit them to contain acid substances, as fertilizers, without rotting are classified in class 23, CHEMICALS, subclass 11, Packing chemicals.

3. RECEPTACLES, AMMUNITION. Specifically restricted to the function of containing ammunition for storage and shipping.

Note.—Devices holding fixed ammunition ready for insertion into magazines of firearms are classified as Magazine-chargers in class 42, FIREARMS.

Search Class—

217—WOODEN RECEPTACLES, subclass 18, Boxes, Cells.

4. RECEPTACLES, CAMP AND LUNCH KITS. Receptacles arranged to hold outfits for camping. Also portable boxes and cases providing specially-arranged compartments for holding luncheon articles or different kinds of food.

Note.—Does not include constructions arranged to cook or maintain heat in the articles of food, as the same are classified in class 126, STOVES AND FURNACES, subclass 40, Heaters, Lunch.

Note.—Nor does it include receptacles holding camping outfits and convertible into a desk, table, or other article of furniture, as such constructions are classified in class 190, BAGGAGE, subclass 12, Convertible, Desk or table, Camp-kits.

5. RECEPTACLES, EYEGLASS OR SPECTACLE. Cases or covers for spectacles and eyeglasses.

6. RECEPTACLES, EYEGLASS OR SPECTACLE, HINGED PARTS. Cases for spectacles or eyeglasses involving hinged parts.

7. RECEPTACLES, GARMENT. Receptacles specially adapted to contain garments and made-up articles of cloth, excepting headwear. Includes any former coating with the receptacle for holding the article in shape within such receptacle. Includes also formers special for the purpose of packing garments and not capable of use for display.

Search Class—

190—BAGGAGE, subclass 35, Trunks, Trays.

8. RECEPTACLES, HAT AND HEADWEAR. Hat boxes and cases. Also forms and special devices for retaining hats, etc., in boxes.

Note.—If the form or support is not special to a box or case and is applicable for general display purposes, it is classified in class 211, STORE FURNITURE, as a display device.

9. RECEPTACLES, HAT AND HEADWEAR, RACKS, FRAMES, AND RINGS. Constructions for packing a plurality of hats, etc. Also constructions of rings or bands placed around any individual hat to protect it when it is nested or packed with other hats. Includes cases and frames for hats which are modified to permit the display of the hat, provided the packing function is retained.

10. RECEPTACLES, INSECT-PROOF. Constructions designed to be insect-proof or providing compartments for insecticides. Includes constructions of moth-proof bags when so claimed.

11. RECEPTACLES, FUR. Receptacles constructed to contain sets of furs, muffs, collars, etc.

12. RECEPTACLES, MEDICINE-CHESTS. Cases for holding medicine-vials and other articles, not surgical instruments, employed by physicians.

Search Class—

206—SPECIAL RECEPTACLES AND PACKAGES, subclass 16, Receptacles, Tools and appliances, for surgical-instrument cases.

CLASS 206—Continued.

13. RECEPTACLES, MUSICAL INSTRUMENTS. Covers or cases for musical instruments.

14. RECEPTACLES, MUSICAL INSTRUMENTS, VIOLIN. Cases or covers for violins and like instruments. Also devices for holding violin-bows in the cases.

15. RECEPTACLES, PHONOGRAPH-CYLINDERS. Cases provided with means for holding cylindrical phonograph-records, either a case for a single record or for a plurality of records.

Note.—Does not include a portable case for holding any other part of a phonograph, as such cases are classified under subclass 13, Receptacles, Musical instruments, herein.

Note.—Does not include constructions forming articles of furniture, such as cabinets, stands, etc., provided with means for holding phonograph-records.

Search Class—

206—SPECIAL RECEPTACLES AND PACKAGES, subclass 62, Packages, Plates and sheets, Fragile and sensitive, for holders for phonograph-disks not forming articles of furniture.

16. RECEPTACLES, TOOLS AND APPLIANCES. Receptacles of special shape and interior arrangement provided with partitions, shelves, racks, or arrangement of clasps or retaining devices for holding tools and implements. Does not include toilet-cases or barbers' cabinets.

17. RECEPTACLES, TOOLS AND APPLIANCES, BITS AND DRILLS. Receptacles having interior construction providing recesses for separately holding auger-bits, drills, and like tools. Some needle-holding cases are included by reason of the close structural relation.

- 17.5. RECEPTACLES, TOOLS AND APPLIANCES, SYRINGES. Receptacles specially adapted to contain syringes and attachments.

Search Class—

206—SPECIAL RECEPTACLES AND PACKAGES, subclasses 43, Receptacles, Pocket and personal use, Hypodermic syringes, etc., for pocket containers for hypodermic syringes; and 60, Packages, Rubber bags and tubing, for the special adaptation of a receptacle or package to store rubber bags and tubing.

18. RECEPTACLES, WATCH-MOVEMENT. Cases inclosing and protecting watch-movements. Commonly the case is provided with elastic supports for the watch-movement to prevent injury from shocks.

19. RECEPTACLES, SACRAMENTAL. Receptacles specifically arranged for sacerdotal use.

20. RECEPTACLES, MATCH-SAFES. Constructions specially arranged to hold matches and like articles, such as toothpicks, are included in this subdivision. Constructions such as scratch-pads and wind-guards, which do not serve as receptacles for matches are also included as being structurally allied. This subclass includes constructions of match-safes which are not properly classifiable in any of the following subclasses.

21. RECEPTACLES, MATCH-SAFES, SINGLE-DELIVERY. Match-safes provided with a means for positively delivering the match from the magazine. This class also includes all constructions so acting not properly classifiable in the following subclasses of single delivery.

22. RECEPTACLES, MATCH-SAFES, SINGLE-DELIVERY, GROOVED ROLLER. Match-safes provided with a delivery mechanism comprising a part turning on a pivot, which part is grooved or recessed to receive a match from the magazine and carry the same to delivery.

23. RECEPTACLES, MATCH-SAFES, SINGLE-DELIVERY, GROOVED SLIDE. Match-safes provided with a delivery mechanism comprising a slide having a recess to receive the match from the magazine and carry it to the point of delivery the slide having a movement in a vertical plane or in a plane inclined to the vertical.

24. RECEPTACLES, MATCH-SAFES, SINGLE-DELIVERY, GROOVED SLIDE, HORIZONTAL MOVEMENT. Match-safes provided with a delivery mechanism comprising a slide having a match-receiving recess, the slide having a movement in a horizontal plane.

25. RECEPTACLES, MATCH-SAFES, SINGLE-DELIVERY, PICKER-ARM. Match-safes provided with a delivery mechanism comprising an arm having a pin or clasp on its end, the arm being moved to thrust its end into the match-magazine to engage a match thereon, whereupon the arm is moved into position to deliver the match.

26. RECEPTACLES, MATCH-SAFES, SINGLE-DELIVERY, SLIDING PUSHER. Match-safes provided with a delivery mechanism comprising ways or guides into which the match enters and sliding piece which commonly engages the end of the match and forces it through the delivery-opening.

CLASS 206—Continued.

Search Class—

67—ILLUMINATING BURNERS; subclasses 6, Igniting devices, Implements; 7, Igniting devices, Pocket; 8, Igniting devices, Pocket, Attached lamp; 10, Lamp, Fulminating; 20, Igniting devices, Gaseous, Self-igniting, Fulminating.

27. RECEPTACLES, MATCH-SAFES, SINGLE-DELIVERY, SLIDING PUSHER, POCKET. Match-safes provided with mechanism for delivering single matches, comprising a sliding part which engages the match, commonly at one end, and forces it through the delivery-opening in the case, the match-safes being constructed to be carried in the pockets of the user.

28. RECEPTACLES, MATCH-SAFES, BAFFLE. Match-safes holding matches in a magazine from which the matches must be extricated by the fingers of the individual and provided with baffle plates or parts preventing the extraction of more than one match (or more than a very limited number) at one time.

29. RECEPTACLES, MATCH-SAFES, MATCH-PACKAGES. Constructions in which matches are put up in a holder as a package. Commonly the holder is of paper or other cheap material and is of a size to be conveniently carried in the vest-pocket. The packages are generally distributed for advertising, and the holder is discarded when the matches are consumed.

Search Class—

206—SPECIAL RECEPTACLES AND PACKAGES, subclass 31, Receptacles, Match-safes, Box-holders and convertible boxes, for match-packages in which the casing or box is convertible into a holder.

30. RECEPTACLES, MATCH-SAFES, SIDE-SUPPORTED. Receptacles commonly designed to be supported on a vertical surface, as a wall, for receiving matches.

Search Class—

206—SPECIAL RECEPTACLES AND PACKAGES, subclass 31, Receptacles, Match-safes, Box-holders and convertible boxes.

31. RECEPTACLES, MATCH-SAFES, BOX-HOLDERS AND CONVERTIBLE BOXES. Devices for receiving the entire box of matches or the sliding tray of the box. Also includes match-packages in which the boxes which are convertible into holders may be supported on a wall or table.

32. RECEPTACLES, MATCH-SAFES, WITHDRAWAL IGNITING. Stands in which the matches are held with their stems projecting in position for removal, the matches being retained by their head portions and the arrangement such that the match is ignited as it is withdrawn from the holder.

33. RECEPTACLES, MATCH-SAFES, POCKET. Match-receptacles of such size and shape as to adapt them to be carried in the pocket or otherwise on the person of the user.

Note.—If, however, the pocket-box is provided with means for delivering the matches, it is classified in the proper subclass under 21, Receptacles, Match-safes, Single-delivery.

Note.—This class of match-safes does not include any combination of match-holder with candle-holders or lamps or any other material to be lighted from the match for the purpose of supplying heat or light, nor does it include any lighters where the igniting material is deposited on a flexible strip or is in the form of pellets or beads. Such constructions are classified in class 67, ILLUMINATING BURNERS, subclass 3, Igniting devices, and the minor subclasses thereunder.

Search Class—

206—SPECIAL RECEPTACLES AND PACKAGES, subclass 33, Receptacles, Pocket and personal use, Combination.

34. RECEPTACLES, MATCH-SAFES, POCKET, WITHDRAWAL IGNITING. Pocket match-safes so constructed that in the ordinary operation of the parts the match is ignited as it is withdrawn from the box.

Search Class—

206—SPECIAL RECEPTACLES AND PACKAGES, subclasses 27, Receptacles, Match-safes, Single-delivery, Sliding pusher, Pocket, and 32, Receptacles, Match-safes, Withdrawal igniting.

35. RECEPTACLES, MATCH-SAFES, POCKET, CIGAR-CUTTERS AND WIND-GUARDS. Pocket match-boxes provided with a cigar-cutting appliance or with a wind-guard to protect the flame of the match when ignited.

36. RECEPTACLES, MATCH-SAFES, SCRATCHERS AND WIND-GUARDS. Devices carrying friction-surfaces against which the match head is to be rubbed to ignite it. Also devices for protecting the flame of the match to enable the user to light a pipe or cigar.

37. RECEPTACLES, POCKET AND PERSONAL USE. Receptacles in which the novelty is inherent in the construction or configuration of the case or box to arrange it to be conveniently carried in the pocket or otherwise on the person of the user.

38. RECEPTACLES, POCKET AND PERSONAL USE, COMBINATION. Pocket-cases provided with two or more compartments specifically arranged to hold diverse articles or a box or case having but a single compartment, but also carrying some article of personal use, such as a comb, knife, compass, etc.

CLASS 206—Continued.

39. RECEPTACLES, POCKET AND PERSONAL USE, TICKET-CASES. Pocket-cases specially constructed to hold tickets, cards, stamps, etc.

Note.—If the case is provided with a movable part actuated to extrude the ticket or stamp, that it may be readily dispensed, it is classifiable in the next subclass 40, Receptacles, Pocket and personal use, Ticket-cases, Ejecting.

40. RECEPTACLES, POCKET AND PERSONAL USE, TICKET-CASES, EJECTING. Pocket-cases specially constructed to hold tickets, cards, stamps, etc., and provided with means for ejecting a ticket or card.

41. RECEPTACLES, POCKET AND PERSONAL USE CIGARS AND TOBACCO. Pocket-cases for cigars and tobacco. Includes pocket-pouches special for holding tobacco or smokers' articles. Includes also cases for holding partly-consumed cigars, also shields for protecting cigars in the pocket.

Note.—Packages of one or several cigars are classified in class 131, TOBACCO, subclass 11, Packing.

42. RECEPTACLES, POCKET AND PERSONAL USE, PELLETS AND GRANULES. Pocket-receptacles specially designed for holding and delivering pellets and granules.

43. RECEPTACLES, POCKET AND PERSONAL USE, HYPODERMIC SYRINGES, ETC. Pocket-cases for holding hypodermic syringes, surgical needles, and like articles.

44. RECEPTACLES, DISPLAY. Shipping and storage receptacles and packages having a modified construction to provide a display function.

Note.—If the display function is the sole object of the construction, the device is classified in class 211, STORE FURNITURE.

45. RECEPTACLES, DISPLAY, TERRACED OR STEPPED SHELVES. Display-receptacles provided with terraced or stepped shelves or supports for the articles. Also constructions of trays attached together, so that they may be brought into a position where the trays are terraced relatively to each other.

Note.—If the construction includes means for retaining the articles in position to prevent their displacement while being transported or other features common to traveling-cases, it is classified in class 190, BAGGAGE, subclass 16, Sample-cases.

46. PACKAGES. Packages not properly classifiable in any of the following subclasses of packages.

47. PACKAGES, COMBINATION. Packages of a plurality of materials of different properties which are employed together in combination to make any definite solution or composition or which are to be used successively in any operation, also packages of any two or more articles to be cooperatively used, such as a covering material and fasteners and trimmings to be used therewith.

48. PACKAGES, COMBINATION, MATCHES WITH CIGARETTES, ETC. Packages of cigarettes or cigars with matches.

Note.—If the construction comprises a paper blank specially cut and folded to provide compartments for the matches and cigarettes, it is classifiable in class 229, PAPER RECEPTACLES, subclass 16, Folded blank boxes.

49. PACKAGES, EMBROIDERY, LACES, AND RUCHING. Packages of embroidery, laces, trimming, etc. Commonly the package prevents the lace or ruching from being crushed and also provides for a display of a portion of such lace.

50. PACKAGES, CLOTH-BOLTS, BOARDS, ETC. Cloth-bolts, boards for such bolts, wrappers or covers for bolts of cloth, also sample-holders constructed to be used with the bolt.

Search Class—

229, PAPER RECEPTACLES, subclass 87, Wrappers.

51. PACKAGES, RIBBONS, BRAIDS, AND TRIMMINGS. Packages of the articles named, also patents for the blocks, reels, cards, frames, etc., around which the ribbons, braid, etc., are wound. Includes also special package devices for velvets, plushes, fringes, and the like for preventing the creasing of such fabrics when packed.

Search Class—

242—WINDING AND REELING, subclasses 50, Cordage, Card-boards and forms; 61, Reeling and unreeling, Fabrics, Card-boards and forms, for winding devices.

52. PACKAGES, RIBBONS, BRAIDS, AND TRIMMINGS, ROLLS OR SPOOLS, INCLOSED. Packages of rolls or spools of ribbons, etc., contained in an inclosing case to protect the merchandise, also to permit the rotation of the roll or spool.

53. PACKAGES, RIBBONS, BRAIDS, AND TRIMMINGS, ROLLS OR SPOOLS, CLAMPS. Devices applied to rolls or spools of ribbon, braid, etc., for preventing the unrolling of the fabric. This subclass comprises all such clamps not properly classifiable in the following subclasses of Clamps.

54. PACKAGES, RIBBONS, BRAIDS, AND TRIMMINGS, ROLLS OR SPOOLS, CLAMPS, CENTRALLY ATTACHED. Clamps applied to rolls or spools of ribbon, etc., and secured to the center of the roll or spool.

CLASS 206—Continued.

55. **PACKAGES, RIBBONS, BRAIDS, AND TRIMMINGS, ROLLS OR SPOOLS, CLAMPS, LAYER-RETAINED.** Clamps applied to rolls or spools of ribbon, etc., one member of the clamp engaging between the layers of the ribbon or braid to retain the clamp in position.
56. **PACKAGES, DISPENSING.** Packages designed to facilitate the dispensing of the material packed. Commonly the package is constructed so that the wrapper is removed or destroyed as the material packed is consumed or a follower acts on the packed material to extrude the same from the package. Packages having other dispensing features are, however, included.
57. **PACKAGES, DISPENSING, PAPER SHEETS.** Packages of paper sheets in which provision is made for the ready removal of the individual sheets. Includes patents for the shape and character of the sheet, as well as patents for the package. Does not include any container or holder provided with means acting positively to extrude the sheets or any container arranged to be secured to any wall or support as a permanent case or holder.
58. **PACKAGES, DISPENSING, PAPER ROLLS.** Rolls of paper and the roll and container or support when the same are put up as a single package and in such form that the container or support is not intended for use with any second roll.
- Search Classes—**
 211—STORE FURNITURE, subclass 31, Serving apparatus, Roll-holders.
 242—WINDING AND REELING, subclass 159, Special packages, for cores and holders.
59. **PACKAGES, ROLLS AND REELS.** Includes any roll or reel packages of material other than textile. Includes the reel construction unless the form of the same is specific for use in a special machine.
- Note.**—Does not include stands or forms for holding wire coils to deliver same or collapsible cores for forming the coil and which are afterward withdrawn.
- Search Class—**
 242—WINDING AND REELING, subclasses 68, Cores and holders; 72, Cores and holders, Contractile; 77, Reels; 110, Reels, Contractile; 159, Special packages; 161, Special packages, Bobbins, cops and spools.
60. **PACKAGES, PLATES AND SHEETS.** Packages of plate or sheet material, such as roofing, strawboard, etc.
61. **PACKAGES, PLATES AND SHEETS, FLY-PAPER.** Packages of sticky fly-paper. Commonly special means are provided to prevent the flow of the adhesive from between the sheets.
62. **PACKAGES, PLATES AND SHEETS, FRAGILE AND SENSITIVE.** Packages of plates or sheets of fragile material or provided with sensitive surfaces, such as photographic plates, carbon sheets, gramophone-disks, etc.
63. **PACKAGES, STATIONERY.** Packages of stationery. Commonly the package comprises a box or case arranged to contain certain amounts of paper and envelopes, such box or case being sold as a unit.

CLASS 206—Continued.

- 63.2. **PACKAGES, SURGICAL SUPPLIES.** Miscellaneous packages of materials and articles adapted for use in treating wounds or diseased portions of the body, where the particular characteristic of the material or article is not of the invention.
- Search Class—**
 206—SPECIAL RECEPTACLES AND PACKAGES, subclasses 12, Receptacles, Medicine chests, for receptacles specially adapted to contain a series of medicine bottles and accessories; and 16, Receptacles, Tools and appliances, for surgical instrument cases.
- 63.3. **PACKAGES, SURGICAL SUPPLIES, LIGATURES.** Packages of filamentary material, generally aseptic, specially adapted for use in stitching wounds and other surgical operations.
- Search Class—**
 242—WINDING AND REELING, subclasses 134, Spool holders, and the subclasses thereunder; 141, Twine holders, and the subclasses thereunder; and 161, Special packages, Bobbins, cops, and spools.
- 63.4. **PACKAGES, SURGICAL SUPPLIES, VACCINE POINTS.** Packages of splints or analogous small carriers charged with vaccine, meant to be used once and destroyed.
- Search Class—**
 128—SURGERY, subclass 28, Miscellaneous, for special construction of a vaccine point or special means for applying the vaccine.
64. **PACKAGES, THREAD.** Packages of thread, not spooled. Generally skeins of embroidery-silk.
65. **PACKAGES, MULTIPLE ARTICLE, NESTED, STAYED, OR INTERBRACED.** Packages of a plurality of the same article, providing any particular form of casing or interbracing special to the shape and character of the articles, also any clamp or brace special to the articles packed and employed to hold the articles rigid relatively to each other or to the casing.
66. **PACKAGES, NEEDLES AND PINS.** Packages of needles and pins. Includes some needle-cases arranged to fit within the central bore of a thread-spool.
- Note.**—Does not include any combination cases of needles, thimbles, spools, etc., such packages being classified in Class 223, APPAREL APPARATUS, subclass 35, Needle-holders.
67. **PACKAGES, PENCILS, ETC.** Packages of pencils and like articles.
- Note.**—Does not include cards to which pencils or penholders are attached, as the same are classified in Class 211, STORE FURNITURE, subclass 34, Display-cards.
68. **PACKAGES, INCANDESCENT MANTLES.** Packages of mantles for incandescent lighting.
69. **PACKAGES, RUBBER BAGS AND TUBING.** Packages of the articles named, commonly water-bags, fountain-syringes, and the like, with tubing.
70. **PACKAGES, WATCH-SPRINGS.** Packages of watch-springs. Commonly a casing incloses the spring and maintains the same in coiled condition ready for insertion into the watch-barrel.
71. **PACKAGES, METALLIC LEAF.** Books, rolls, and other packages of metal leaf for gilders' use.



CLASS 207.—PLASTIC METAL WORKING.**DEFINITIONS.***Class.*

This class is intended to include all plastic operations upon metal that are not otherwise classifiable. It comprises mainly inventions whereby metal is molded or cast in detail by applying the molding instrumentality to different portions of the metallic mass successively or continuously. The metal to be operated upon may be at any temperature between its normal cold state and the molten state. In general the operations falling within this class cause a marked molecular flow in the article being shaped.

Note.—Inventions directed to the shaping of metal by a plastic operation of the kind falling within the definition of this class combined with treatment subsidiary thereto are classified in this class in the appropriate plastic metal operation subclasses; but those including such plastic shaping combined with subsequent treatment not merely subsidiary are placed in the appropriate Special work. Combined machine or process subclasses, in class 29, METAL WORKING. Compare classes 22, METAL FOUNDRY; 78, METAL FORGING AND WELDING; 80, METAL ROLLING; 91, COATING, subclasses With metal; 113, SHEET METAL WARE, MAKING, subclass 38, Die shaping, and the subclasses thereunder; 205, METAL DRAWING, and 219, ELECTRIC HEATING AND RHEOSTATS, subclass 1, Metal heating and working, and the subclasses thereunder.

Subclasses.

1. MISCELLANEOUS. Inventions relating to plastic metal working not otherwise classifiable.

Search Classes—

- 18—PLASTICS, subclasses 5, Molding devices, for plastic material shaping, and 24, Molding devices, Dipping, for the formation of shapes by the immersion of a core in a liquid.
91—COATING, subclass 12.5, Special machines, With metal, Immersion, for dipping operations.

2. DIE-EXPRESSION. Instruments for use in progressive molding of metal, either in a molten or relatively cold state, by which the metal is forced through a die, resulting in considerable molecular flow transverse to the direction of the application of the force, as well as parallel therewith.

Note.—Die-expressing differs from drawing in that the mass of metal is confined on all sides and at all points except the die opening, while in drawing there is no confinement of the original blank except at the die opening. Moreover, in the latter the transverse flow is very slight and the reduction at each passage through the die is relatively small. The operation herein designated "die-expressing" is sometimes known as "extruding" or "squirting."

Search Classes—

- 18—PLASTICS, subclasses 12, Molding devices, Die-expressing, for similar structures operating on plastic materials, and 13, Molding devices, Die-expressing, Compound, for structures forming compound articles.
22—METAL FOUNDRY, subclass 11, Molding apparatus, Core-making, Die-expressing; 25, PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 11, Die-expressing, and the minor subclasses thereunder; and 107, BREAD, PASTRY, AND CONFECTION MAKING, subclass 14, Molding apparatus, Die-expressing.
29—METAL WORKING, subclass 188, Metal stock, Processes, Compound bars and tubes, for processes of making covered metal stock of various forms and cross sections.
173—ELECTRICITY, CONDUCTORS, subclass 244, Machines for covering, for similar structures applying insulating material.
205—METAL DRAWING, subclass 4, Bars and tubes, By thrust, for means for pushing a bar through a die making small reductions.

3. DIE-EXPRESSION, PLUNGER AND MANDREL. Die-expressing apparatus provided with a plunger and a mandrel, the former acting on the metal to cause its flow and the latter cooperating with the die to form or shape the metal into a product of tubular character.

Search Classes—

- 18—PLASTICS, subclass 14, Molding devices, Die-expressing, Tube and hollow, for similar structures.
205—METAL DRAWING, subclass 4, Bars and tubes, By thrust, for structure reducing tubes having mandrels supporting the interiors of the tubes.

4. DIE-EXPRESSION, PLUNGER AND MANDREL, TUBULAR MANDREL. Die-expressing apparatus having a plunger and a mandrel that is hollow to permit the passage of a wire or the like about which the tubular sheath is formed by the machine.

Search Classes—

- 18—PLASTICS, subclass 13, Molding devices, Die-expressing, Compound, for similar structures.
173—ELECTRICITY, CONDUCTORS, subclass 244, Machines for covering, for structure applying insulating material in a similar manner.

CLASS 207—Continued.

5. DIE-EXPRESSION, PLUNGER AND MANDREL, BRIDGE MANDREL. Die-expressing apparatus in which the mandrel is supported by the bridge pieces extending from the mandrel across the die opening.

6. DIE-EXPRESSION, PLUNGER AND MANDREL, INTEGRAL. Apparatus for die-expressing having the same part constructed to perform the functions of a plunger and a mandrel or having the mandrel connected with or integral with the plunger. Apparatus in which the plunger is adapted to pierce a metal mass or billet, displacing the mass and causing a longitudinal extension of the metal, is included herein.

Search Class—

- 78—METAL FORGING AND WELDING, subclass 9, Forging, Billet piercing, and the subclasses thereunder, for devices in which there is simply a piercing and lateral expansion of the metal, with no substantial change in the length thereof.

7. DIE-EXPRESSION, PLUNGER AND MANDREL, INTEGRAL, FIXED PLUNGER. Die-expressing apparatus in which the integral plunger and mandrel is stationary and the container is moved.

8. DIE-EXPRESSION, PLUNGER AND MANDREL, INTEGRAL, ROTARY PLUNGER. Die-expressing apparatus in which the integral plunger and mandrel is given a rotary as well as a reciprocating motion while piercing and elongating a mass of metal.

Search Classes—

- 78—METAL FORGING AND WELDING, subclass 11, Forging, Billet piercing, Rotary mandrel or billet, for devices for piercing or expanding a blank without elongating it.
80—METAL ROLLING, subclass 13, Tubes, Axial rolling, for tube forming apparatus causing relative rotation of the mandrel and billet.

9. DIE-EXPRESSION, PLUNGER. Die-expressing apparatus having a plunger, the mandrel being omitted, and therefore producing articles of solid cross section.

Search Classes—

- 18—PLASTICS, subclass 12, Molding devices, Die-expressing; 22, METAL FOUNDRY, subclass 11, Molding apparatus, Core-making, Die-expressing; 25, PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 11, Die-expressing; and 107, BREAD, PASTRY, AND CONFECTION MAKING, subclass 14, Molding apparatus, Die-expressing.
205—METAL DRAWING, subclass 4, Bars and tubes, By thrust, for a plunger adapted to push a bar through a reducing die.

10. DIE-EXPRESSION, PROCESSES. Processes of molding metal by expressing through dies.

Search Class—

- 18—PLASTICS, subclass 55, Processes, Molding, for processes relating to the die-expressing of plastic material.

11. GRAVITY-MOLDING. Inventions wherein molten metal is fed to a mold, by which it is supported until firm enough to retain the desired cross section, and is then removed from the molding surface. The operation is generally continuous, and the product varies in dimension with the charge of plastic metal. No means are provided to exert pressure on the metal in the direction of its movement.

Search Class—

- 18—PLASTICS, subclass 9, Molding devices, Rolling.

12. GRAVITY-MOLDING, TRAVELING MOLD. Gravity-molding apparatus wherein the shaping surface moves with the metal.

Search Class—

- 22—METAL FOUNDRY, subclass 75, Casting apparatus, Moving mold, and the subclasses thereunder, for moving mold structures.

13. GRAVITY-MOLDING, TRAVELING MOLD, ROTARY. Gravity-molding apparatus of the traveling mold type in which the shaping surface is mounted or formed on a rotating member, such as a disk.

Search Class—

- 22—METAL FOUNDRY, subclasses 75, Casting apparatus, Moving mold, and 77, Casting apparatus, Moving mold, Rotating table, for rotating structures.

14. GRAVITY-MOLDING, BY ROLLS. Inventions for shaping molten metal by the pressure of rolls.

Search Classes—

- 18—PLASTICS, subclass 9, Molding devices, Rolling, for rolls shaping plastic material.
49—GLASS, subclass 33, Molding, Rolling, and 107, BREAD, PASTRY, AND CONFECTION MAKING, subclass 10, Molding apparatus, Rolling.
80—METAL ROLLING, for apparatus for rolling metal not molten.

CLASS 207—Continued.

15. **CONTAINERS.** Inventions in the construction of the vessel for holding the plastic metal to be subjected to a molding operation.
16. **COOLING AND HEATING.** Inventions in the cooling or heating of the metal itself or the parts in contact with the metal.
17. **DIES.** Specialized die construction through which the metal is expressed or extruded.
- Search Class—**
25—PLASTIC BLOCK AND EARTHENWARE APPARATUS, subclass 17, Die-expressing, Dies, and the subclasses thereunder, for die constructions.

CLASS 207—Continued.

18. **DIES, VARIABLE OPENING.** Expressing dies provided with mechanism to regulate the size and position of the die opening.
19. **MANDRELS.** Mandrel or core constructions about which the metal is formed, resulting in articles of tubular shape, specialized to the requirements of processes and apparatus classified herein.
- Search Class—**
78—METAL FORGING AND WELDING, subclass 103, Mandrels, for mandrels particularly adapted for use in the welding, swaging, or drawing of metal tubes.

CLASS 216.—LABEL PASTING AND PAPER HANGING.

DEFINITIONS.

Class.

This class includes apparatus and processes for the affixing, by means of adhesives, of pieces of paper, metal foil, cloth, textile fabrics, etc., in various forms to single or multiple flat or curved surfaces, or for the pasting to and encircling of single articles or packages already formed, with paper strips or bands, generally of the nature of stamps or labels, which strips are not folded down at the sides. (Where a strip is so folded, see class 93, PAPER MANUFACTURES, subclass 2, Wrapping machines, Miscellaneous.)

The class includes such arts as label and postage stamp affixing, box, bottle, package, and spool labeling, paper hanging and bill posting, photograph and picture mounting, etc., but only where the affixing is by means of adhesives.

For producing finished fabrics such as bristol board, etc., see class 154, LAMINATED FABRIC AND ANALOGOUS MANUFACTURES.

For the manufacture of articles from dry paper generally see class 93, PAPER MANUFACTURES.

For the covering of empty paper boxes with paper in the process of the manufacture thereof see class 93, PAPER MANUFACTURES, subclass 54, Box machines, Covering.

For securing bundles by means of paper strips and bands see class 93, PAPER MANUFACTURES, subclass 93, Bunching and banding, and other appropriate subclasses.

For the wrapping of newspapers and pamphlets for mailing purposes see class 101, PRINTING, subclass 46, Folders, Newspaper wrapping machines.

For affixing bands to cigars see class 131, TOBACCO, subclass 61, Cigar banding.

For moistening and sealing devices for envelopes not combined with stamp affixing means see class 120, STATIONERY, subclass 6, Moisteners and sealers.

This is a combination class, and in order that a patent or application be classified herein the apparatus or process claimed should include the means for or step of affixing, or a means or process so intimately related thereto as to be inseparable therefrom.

Elements such as paste applying means, cutters, paper feeding devices, etc., should be sought in the appropriate element classes, thus:

Devices which apply paste merely or combined with feeding or cutting means, or both, without performing any affixing function will be found in class 91, COATING.

Mechanism for cutting or shearing sheets alone or combined with feeding mechanism will be found in class 164, CUTTING AND PUNCHING SHEETS AND BARS.

Paper feeding mechanism *per se* and in combination with printing mechanism will be found in class 101, PRINTING.

Also paper serving apparatus combined with cutting or tearing means will be found in class 211, STORE FURNITURE, subclass 29, Serving apparatus, and the subclasses thereunder.

The main subclasses of this class are divided out on lines of machine type and the minor subclasses on lines of machine element.

A search on any specific machine element, such as a variety of label or article feed or of affixing or paste applying and moistening means should be made in the minor subclass divided out on that particular line, into which will be found cross-referenced all patents in the entire class (216) which show that element, regardless of the particular type of machine in which it may occur.

For example, if searching for a strip machine, reciprocating cutter, provided with screw feed, the combination, if existing, will be found in subclass 22, Machines, Strip, Severing, Reciprocating cutter, herein. If the combination is not found therein and it is desired to find the screw feed *per se*, search should be made in subclass 19, Machines, Sheet, Screw feed, where will be found classified or cross-referenced all patents for label-affixing machines disclosing screw feed. If a feed mechanism is sought of a type not indicated in the title of any subclass herein, a general search will have to be made in this class (216) and elsewhere.

In the following definitions the word "label" is used generally to include also a postage stamp, a paper seal, a photograph, or any similar sheet of paper affixed in the manner to which this class is limited.

Subclasses.

1. COMBINED MACHINES. Machines answering the class definition for performing functions additional to label affixing.

2. COMBINED MACHINES, LABEL PRINTING AND AFFIXING. Machines for printing the label, in whole or in part, and affixing the same.

Note.—This subclass is superior to class 101, PRINTING.

Search Classes—

91, COATING, subclass 16, Combined machines, Coating and printing; 93, PAPER MANUFACTURES, subclasses 34, Bag machines, Printing attachments, and 73, Envelop machines, Printing and stamping, for coating with adhesives and printing.

3. COMBINED MACHINES, ENVELOP SEALING AND STAMPING. Machines for sealing envelopes and affixing a stamp to same.

Note.—This subclass is superior to class 120, STATIONERY, subclass 6, Combination devices, Moisteners and sealers, in which, however, search should be made for the envelop moistening and sealing structure, as also in subclasses 75, Moisteners, and 76, Moisteners, Roller.

CLASS 216—Continued.

4. PAPER HANGING. Miscellaneous apparatus and processes for paper hangers' use in affixing wall paper and posters.

Search Class—

15, BRUSHING AND SCRUBBING, subclass 36, Brush heads and faces, Paint and whitewash brushes, for paper hangers' brushes.

5. PAPER HANGING, COATING AND AFFIXING APPARATUS. Apparatus not held in the hands of the operator for applying paste and affixing wall paper, etc.

6. PAPER HANGING, COATING AND AFFIXING APPARATUS, HAND. Hand held devices for both applying paste and affixing paper.

Search Class—

216—LABEL PASTING AND PAPER HANGING, subclass 20, Machines, strip.

7. PAPER HANGING, AFFIXING APPARATUS. Apparatus for affixing paper, paste having been previously applied either to the paper or to the wall.

8. PAPER HANGING, SURFACE PREPARATION. Machines and processes for cleaning and preparing walls and other surfaces prior to affixing.

Note.—For detergent compositions for removing paper from walls see class 87, OILS, FATS, AND GLUE, subclass 5, Detergents. For scrapers see class 145, WOODWORKING TOOLS, subclass 47, Scrapers, and class 72, MASONRY AND CONCRETE STRUCTURES, subclass 137, Implements, Scrapers.

9. MACHINES. Miscellaneous label affixing machines comprising all types of machines other than those hereinafter mentioned.

10. MACHINES, SPOOL LABELING. Machines for affixing labels to spools of cotton, sewing silk, etc.

11. MACHINES, SELECTIVE. Machines capable of selecting and affixing some particular one of several varieties of labels.

Search Classes—

133—COIN HANDLING; 211, STORE FURNITURE, subclass 8, Cabinets, Delivering, and 232, DEPOSIT AND COLLECTION RECEPTACLES for selective delivering mechanism.

12. MACHINES, MULTIPLE LABELING. Machines designed for affixing a plurality of labels, either of like or different size and shape, to the same article.

13. MACHINES, MULTIPLE LABELING, BOTTLE NECK AND BODY. Machines for affixing labels to the body and neck of a bottle.

Search Class—

216—LABEL PASTING AND PAPER HANGING, appropriate machine type subclasses for body labeling mechanism.

14. MACHINES, MULTIPLE LABELING, SAMPLE CARD. Machines designed for affixing a plurality of labels to a sheet of cardboard or its equivalent, as in the making of sample cards of painters' colors, textile fabrics, etc.

15. MACHINES, SHEET. Machines for severing from a sheet a label of less width than the same and affixing it.

Note.—The four following subclasses are divided out from this subclass on four types of feed mechanism for the sheet, strip, or cutter.

Note.—Label feeding and analogous article feeding wherever found in class 216 is cross-referenced into some one of these label feed subclasses, if of analogous structure.

Note.—For other types of feed search the subclass in this class (regardless of machine type) in the title of which the desired feed is indicated. If the feed sought is not of a kind indicated in any of the titles of this class, a general search will have to be made in class 216 and elsewhere.

Search Class—

93—PAPER MANUFACTURES.

16. MACHINES, SHEET, RACK AND PINION FEED. Machines having a rack and pinion feed for the sheet or cutter.

17. MACHINES, SHEET, RACK AND PAWL FEED. Machines having a rack and pawl feed for the sheet or cutter.

18. MACHINES, SHEET, ESCAPEMENT FEED. Machines having an escapement feed for the sheet or cutter.

19. MACHINES, SHEET, SCREW FEED. Machines having a screw feed for the sheet or cutter.

20. MACHINES, STRIP. Machines for delivering a strip and provided with affixing and paste applying or moistening means, but without means for severing the label.

Note.—Label feeding and analogous article feeding wherever found in class 216 is cross-referenced into some one of these label feed subclasses, if of analogous structure.

Note.—For other types of feed search the subclass in this class (regardless of machine type) in the title of which the desired feed is indicated. If the feed sought is not of a kind indicated in any of the titles of this class, a general search will have to be made in this class (216) and elsewhere.

CLASS 216—Continued.

Search Classes—

- 216—LABEL PASTING AND PAPER HANGING, subclasses 5, Paper hanging, Coating and affixing apparatus; 6, Paper hanging, Coating and affixing apparatus, Hand, and 7, Paper hanging, Affixing apparatus, for means for handling the label strip.
- 101—PRINTING, subclasses 46, Folders, Newspaper wrapping machines; 56, Hand stamps; 59, Hand stamps, Head and handle, Inking attachment, and 187, Ticket machines.
- 211—STORE FURNITURE, subclass 29, Serving apparatus, and subclasses thereunder.
21. MACHINES, STRIP, SEVERING. Strip machines provided with means for severing the label.
- Search Classes—
- 93—PAPER MANUFACTURES, subclass 56, Box machines, Staying.
- 101—PRINTING, subclasses 23, Bed and platen machines, Web, and 31, Deliveries, Dropper.
22. MACHINES, STRIP, SEVERING, RECIPROCATING CUTTER. Strip machines in which the cutter reciprocates, usually in a direction perpendicular to the surface of the label.
- Note.—The subclasses subordinate hereto are divided out from this subclass on types of feed mechanism.
- For other types of feed search the subclass in this class (regardless of machine type) in the title of which the desired feed is indicated. If the feed sought is not of a kind indicated in any of the titles of this class, a general search will have to be made in this class (216) and elsewhere.
23. MACHINES, STRIP, SEVERING, RECIPROCATING CUTTER, PUSHER FEED. Machines of the type stated which use a pusher for feeding the label strip.
24. MACHINES, STRIP, SEVERING, RECIPROCATING CUTTER, FOUR-MOTION FEED. Machines of the type stated which feed the label strip by means similar to the four-motion feed of a sewing machine.
25. MACHINES, STRIP, SEVERING, RECIPROCATING CUTTER, ROLLER FEED. Machines of the type stated which feed the label strip by means of feed rollers or their equivalent.
- Search Class—
- 216—LABEL PASTING AND PAPER HANGING, subclass 27, Machines, Strip, Severing, Reciprocating cutter, Rotary tooth feed, for corrugated rollers.
26. MACHINES, STRIP, SEVERING, RECIPROCATING CUTTER, ROLLER FEED, HAND. Machines of the type stated using a hand actuated roller feed.
- Search Class—
- 216—LABEL PASTING AND PAPER HANGING, subclass 27, Machines, Strip, Severing, Reciprocating cutter, Rotary tooth feed, for corrugated feed rollers.
27. MACHINES, STRIP, SEVERING, RECIPROCATING CUTTER, ROTARY TOOTH FEED. Machines of the type stated using a toothed feed wheel or corrugated roller for feeding the label strip.
28. MACHINES, STRIP, SEVERING, RECIPROCATING CUTTER, PERFORATION FEED. Machines of the type stated in which the stamp or label is fed by teeth which enter its perforations.
29. MACHINES, STRIP, SEVERING, PIVOTED CUTTER. Strip machines in which the label is severed by a pivoted cutter not of scissors type.
30. MACHINES, STRIP, SEVERING, PIVOTED CUTTER, SCISSORS TYPE. Machines of the type stated operating on the principle of a pair of scissors.
- Note.—The subclasses subordinate hereto are divided out from this subclass on types of label feed.
- Note.—For other types of feed search the subclass of this class (regardless of machine type) in the title of which the desired feed is indicated. If the feed sought is not of a kind indicated in any of the titles of this class, a general search will have to be made in this class (216) and elsewhere.
31. MACHINES, STRIP, SEVERING, PIVOTED CUTTER, SCISSORS TYPE, BELT CONVEYER FEED. Machines of the type stated using one or more endless belt conveyers for feeding the label strip.
32. MACHINES, STRIP, SEVERING, PIVOTED CUTTER, SCISSORS TYPE, RIBBON FEED. Machines of the type stated in which the label strip is fed by the winding and unwinding of one or more ribbons.
33. MACHINES, STRIP, SEVERING, TEARING. Machines in which the label is severed by tearing along lines of perforation, at indentations or notches, or at the edge of a metal strip.
- Search Class—
- 211—STORE FURNITURE, subclasses 29, Serving apparatus; 32, Serving apparatus, Roll holders, Cutting attachment, and 33, Serving apparatus, Roll holders, Feeding attachment.
34. MACHINES, AFFIXING MAGAZINE, MOVING. Machines in which the label is directly fixed from a magazine which moves into contact with the article during affixing.
- Note.—The subclasses under "Affixing magazine, Moving," are divided out on certain types of affixing means by which the label is wiped, rolled, or pressed upon the article. Affixing means wherever found in class 216 are cross-referenced into some one of these affixing subclasses, if of analogous structure. If the affixing means sought is not of a kind indicated in any subclass title, a general search will have to be made in this class and elsewhere.

CLASS 216—Continued.

Search Class—

- 93—PAPER MANUFACTURES, especially subclass 56, Box machines, Staying.
35. MACHINES, AFFIXING MAGAZINE, MOVING, PRESSURE PAD OR PLUNGER. Machines of the type stated in which a pad presses or a plunger forces the label upon the article.
36. MACHINES, AFFIXING MAGAZINE, MOVING, PRESSER FORM. Machines of the type stated in which a form presses the label upon the article.
- Search Class—
- 93—PAPER MANUFACTURES, appropriate subclasses.
37. MACHINES, AFFIXING MAGAZINE, MOVING, ROLLERS. Machines of the type stated in which one or more rollers are used for affixing the label.
- Search Class—
- 93—PAPER MANUFACTURES, appropriate subclasses.
38. MACHINES, AFFIXING MAGAZINE, MOVING, WIPERS OR BRUSHES. Machines of the type stated in which the label is affixed by either wipers or brushes.
- Search Class—
- 93—PAPER MANUFACTURES, appropriate subclasses.
39. MACHINES, AFFIXING MAGAZINE, MOVING, FLEXIBLE WRAPPER. Machines of the type stated in which the label is affixed by a flexible wrapper which envelops it in whole or in part, and which in some cases causes the article to revolve.
- Search Class—
- 93—PAPER MANUFACTURES, appropriate subclasses.
40. MACHINES, AFFIXING MAGAZINE, MOVING, REVOLVING ARTICLE. Machines of the type stated in which the article revolves while the label is being affixed.
- Search Classes—
- 216—LABEL PASTING AND PAPER HANGING, 51, Storage magazine, appropriate subclasses for revolving article as an affixing means.
- 93—PAPER MANUFACTURES.
41. MACHINES, AFFIXING MAGAZINE, MOVING, FLUID PRESSURE. Machines of the type stated in which the label is affixed by fluid pressure.
- Search Class—
- 93—PAPER MANUFACTURES, appropriate subclasses.
42. MACHINES, AFFIXING MAGAZINE, STATIONARY. Machines in which the label is directly affixed from a stationary magazine, the article moving into contact with the same during the affixing.
- Note.—Magazines will also be found in class 211, STORE FURNITURE, subclass 3, Cabinets, Delivering.
43. MACHINES, AFFIXING MAGAZINE, STATIONARY, ADHESIVE APPLYING OR MOISTENING. Machines of the type stated provided with means for either applying or moistening the adhesive.
- Note.—Some of the various types of paste applying or moistening means are entitled in the following subclasses, and like means wherever found in class 216 are cross-referenced into some one of these subclasses, if of analogous structure. For other coating or moistening means not indicated in the title of any subclass herein and not found in this subclass (43) a general search will have to be made in this class (216) and elsewhere.
- Search Classes—
- 101—PRINTING, subclasses 70, Hand stamps, Tumbler, and 185, Numbering machines, Hand.
- 12—BOOT AND SHOE MAKING, subclass 80, Cement applying devices; 91, COATING, subclasses 18, Machines, and the subclasses thereunder; 55, Driers and coolers, and 56, Elevating devices; 93, PAPER MANUFACTURES, subclasses 66, Envelop machines, Reciprocating, Gumming and folding; 68, Envelop machines, Reciprocating, Gumming, and 69, Envelop machines, Reciprocating, Gumming, Picker faces, and other appropriate subclasses; 101, PRINTING, subclasses 59, Hand stamps, Head and handle, Inking attachment; 63, Hand stamps, Inking attachment; 96, Paper damping machines; 97, Paper damping machines, Winders, and 107, Press copying, Damping, and 131, TOBACCO, subclasses under 5, Cigar machines, for adhesive applying and moistening means.
44. MACHINES, AFFIXING MAGAZINE, STATIONARY, ADHESIVE APPLYING OR MOISTENING, FIXED ROLLER. Machines of the type stated in which the adhesive is applied or moistened by one or more fixed rollers.
- Note.—Coating by means of rollers will be found in all subclasses in which the word "roller" occurs in class 91, COATING; also class 120, STATIONERY, subclasses 6, Combination devices, Moisteners and sealers, and 76, Moisteners, Roller; and in class 101, PRINTING, appropriate subclasses.
45. MACHINES, AFFIXING MAGAZINE, STATIONARY, ADHESIVE APPLYING OR MOISTENING, MOVING ROLLER. Machines of the type stated in which the adhesive is applied or moistened by one or more moving rollers.
46. MACHINES, AFFIXING MAGAZINE, STATIONARY, ADHESIVE APPLYING OR MOISTENING, FIXED RESERVOIR OR ABSORBENT. Machines of the type stated in which the adhesive or moisture is applied by moving the label surface over a stationary reservoir, pad, wick, wiper, sponge, or brush or other equivalent absorbent.
- Search Class—
- 15—BRUSHING AND SCRUBBING, subclass 66, Fountain brushes, Mucilage, for fountain brushes.

CLASS 216—Continued.

47. **MACHINES, AFFIXING MAGAZINE, STATIONARY, ADHESIVE APPLYING OR MOISTENING, MOVING RESERVOIR OR ABSORBENT.** Machines of the type stated in which the adhesive or moisture is applied by a moving reservoir, pad, wick, wiper, sponge, or brush or other equivalent absorbent.
48. **MACHINES, AFFIXING MAGAZINE, STATIONARY, ADHESIVE APPLYING OR MOISTENING, ENDLESS BELT.** Machines of the type stated in which an endless belt is used as a conveyer of moisture or liquid adhesive.
49. **MACHINES, AFFIXING MAGAZINE, STATIONARY, ADHESIVE APPLYING OR MOISTENING, SPRAY OR STEAM.** Machines of the type stated in which the moisture or liquid adhesive is sprayed upon either the label or the article, or in which the adhesive is moistened by a jet of steam.
Note.—As to machine type search class 93, PAPER MANUFACTURES.
50. **MACHINES, AFFIXING MAGAZINE, HAND.** Hand held machines of the type stated, the entire instrument being moved to the article during the affixing.
51. **MACHINES, STORAGE MAGAZINE.** Machines in which the label is conveyed by picker mechanism from a storage magazine to the article to which it is affixed.
Note.—The subclasses under "Storage magazine" are divided out partly on lines of label feeding (picker subclasses) and partly on lines of article support, which are closely analogous to lines of article feeding.
Note.—Label feeding and analogous article feeding wherever found in class 216 is cross-referenced into some one of these label feed subclasses, if of analogous structure.
Note.—For other types of feed search the subclass in this class (regardless of machine type) in the title of which the desired feed is indicated. If the feed sought is not of a kind indicated in any of the titles of this class, a general search will have to be made in this class (216) and elsewhere.
- Search Classes—**
 93—PAPER MANUFACTURES, appropriate subclasses.
 131—TOBACCO, subclasses under 5, Cigar machines.
 211—STORE FURNITURE, subclass 29, Serving apparatus.
52. **MACHINES, STORAGE MAGAZINE, LABEL PICKERS.** Machines of the type stated provided with means, such as pins, electrical means, etc., for conveying the label from the magazine to the article other than as specified in the three following subclasses.
- Search Classes—**
 11—BOOKBINDING, subclass 25, Binding machines, Signature gatherers; 93, PAPER MANUFACTURES, subclasses 68, Envelop machines, Reciprocating, Gumming; 69, Envelop machines, Reciprocating, Gumming, Picker faces, and 70, Envelop machines, Reciprocating, Creasing mechanism; 101, PRINTING, subclass 36, Feeding, and the subclasses thereunder, and 131, TOBACCO, for picker mechanism.
53. **MACHINES, STORAGE MAGAZINE, LABEL PICKERS, NIPPERS.** Machines of the type stated, the picker being a nipper or mechanical finger for grasping the label.
- Search Classes—**
 11—BOOKBINDING, subclass 25, Binding machines, Signature gatherers; 91, COATING, subclass 62, Work holders, Gripper mechanism; 101, PRINTING, subclasses 33, Deliveries, Gripper-fliers, and 115, Printing couple appliances, Grippers; 131, TOBACCO, subclass 11, Packing, for paper feeding and holding nippers.
54. **MACHINES, STORAGE MAGAZINE, LABEL PICKERS, ADHESIVE.** Machines of the type stated in which the picker is coated with an adhesive to which the label will adhere.

CLASS 216—Continued.

Search Classes—

- 11—BOOKBINDING, subclass 25, Binding machines, Signature gatherers; 93, PAPER MANUFACTURES, subclass 69, Envelop machines, Reciprocating, Gumming, Picker faces; 101, PRINTING, subclass 39, Feeding, Separators, for pickers that act by adhesion.
55. **MACHINES, STORAGE MAGAZINE, LABEL PICKERS, SUCTION.** Machines of the type stated in which air pressure causes the label to adhere to the picker.
- Search Classes—**
 11—BOOKBINDING, subclass 25, Binding machines, Signature gatherers; 79, BUTTON MAKING, subclass 17, Blank feeders; 93, PAPER MANUFACTURES, subclass 2, Wrapping machines, Miscellaneous; 101, PRINTING, subclasses 29, Deliveries, and 41, Feeding apparatus, Pneumatic; 113, SHEET METAL WARE, MAKING, subclass 113, Work feeders, and 131, TOBACCO, for suction pickers.
56. **MACHINES, STORAGE MAGAZINE, ARTICLE SUPPORT, TABLE.** Machines in which the article is supported upon a table or cradle during affixing.
Note.—Label feeding and analogous article feeding wherever found in class 216 is cross-referenced into some one of these label feed subclasses, if of analogous structure.
Note.—For other types of feed search the subclass in this class (regardless of machine type) in the title of which the desired feed is indicated. If the feed sought is not of a kind indicated in any of the titles of this class, a general search will have to be made in this class (216) and elsewhere.
- Search Classes—**
 93—PAPER MANUFACTURES; 113, SHEET METAL WARE, MAKING, subclasses under "Bottle capping," and 7, Can making machines, and the subclasses thereunder; 101, PRINTING; 141, WASHING APPARATUS, subclass 7, Bottle and can washers, and appropriate subclasses in 226, PACKAGING LIQUIDS, for article feed and article support.
57. **MACHINES, STORAGE MAGAZINE, ARTICLE SUPPORT, CONVEYER.** Machines in which the article is supported upon a conveyer during affixing.
- Search Class—**
 113—SHEET METAL WARE, MAKING, all subclasses in which the words "endless chain carrier" occur.
58. **MACHINES, STORAGE MAGAZINE, ARTICLE SUPPORT, RUNWAY.** Machines in which the article is supported upon a runway during affixing.
- Search Classes—**
 113—SHEET METAL WARE, MAKING, subclass 7, Can making machines, and the subclasses thereunder, and the subclasses under 59, Soldering, Cans, and 211, STORE FURNITURE, subclass 8, Cabinets, Delivering, for runway feed.
59. **MACHINES, STORAGE MAGAZINE, ARTICLE SUPPORT, ROTARY.** Machines in which the article is supported upon a rotary carrier during affixing.
60. **MACHINES, STORAGE MAGAZINE, ARTICLE SUPPORT, ROLLER.** Machines of the type stated in which the revolving article is supported upon rollers.
61. **TOOLS.** Hand tools of general utility in affixing labels, prints, or smoothing wall paper seams, prints, etc.
- Search Classes—**
 216—LABEL PASTING AND PAPER HANGING, subclass 4, Paper hanging, and 101, PRINTING, appropriate subclasses, and 120, STATIONERY, subclass 76, Moisteners, Roller, for roller construction.
62. **PROCESSES.** Processes, mechanical or otherwise, pertaining to the affixing of labels, prints, photographs, address slips, etc.
- Search Class—**
 216—LABEL PASTING AND PAPER HANGING, subclass 4, Paper hanging, for processes of affixing wall paper.

CLASS 217.—WOODEN RECEPTACLES.

DEFINITIONS.

Class.

This class contains wooden receptacles of all kinds and their accessory parts, except special receptacles for special articles—as, for example, hat-boxes, musicians' cases, etc.

Subclasses.

1. BENT. In these receptacles the side walls are formed of strips or sheets bent into the proper shape.
Note.—Bent-wood vessels in which the form, method of manufacture, etc., do not differ essentially from paper vessels are classified in class 229, PAPER RECEPTACLES.
2. BENT, ANGULAR. Receptacles having pieces forming the side walls bent at an angle, so that the receptacle is angular, not curved, in contour.
Note.—See note under preceding subclass.
3. LININGS. Linings of various materials for boxes, barrels, crates, etc.
Note.—Compositions and paints for coating the interior of such receptacles are classified in class 134, LIQUID COATING COMPOSITIONS, subclass 2, Barrel linings, and subclasses thereunder.
4. TANKS. Invention resides in the structure of a simple wooden tank independent of the various attachments, filling or emptying means, valves, etc.
Note.—These latter are classified in class 137, WATER DISTRIBUTION, and class 220, METALLIC SHIPPING AND STORING VESSELS.
5. BOXES. Miscellaneous wooden boxes not classifiable elsewhere.
6. BOXES, BLOCK. Boxes made from solid blocks by cutting or boring out the interior.
7. BOXES, COMPARTMENT. Miscellaneous boxes divided into compartments.
8. BOXES, COMPARTMENT, FOLDING. Compartment-boxes in which the compartments can be folded or knocked down.
9. BOXES, COMPARTMENT, FOLDING, DISPLAY. Boxes having folding or knockdown compartments for displaying the contents.
10. BOXES, COMPARTMENT, DISPLAY. Compartment-boxes specially adapted for displaying the contents.
11. BOXES, DISPLAY. Boxes specially adapted for displaying the contents.
12. BOXES, KNOCKDOWN. Miscellaneous boxes which fold, collapse, or knock down to form a compact package.
Search Classes—
217—WOODEN RECEPTACLES, subclass 43, Boxes, Crates, Knockdown.
220—METALLIC SHIPPING AND STORING VESSELS, subclass 131, Crates, Knockdown.
13. BOXES, KNOCKDOWN, SECTIONAL. Two or more sections assembled to form a package, each section being itself a receptacle or box.
Search Classes—
217—WOODEN RECEPTACLES, subclass 45, Boxes, Crates, Knockdown, Sectional.
220—METALLIC SHIPPING AND STORING VESSELS, subclass 134, Crates, Knockdown, Sectional.
14. BOXES, KNOCKDOWN, FOLDING, HORIZONTAL AND VERTICAL PIVOT. Boxes whose walls and base have a hinged connection with each other to permit folding without complete disengagement. In this subclass each box has one or more sides hinged to the base by a pivot whose axis is horizontal. To these are hinged the remaining sides on vertical pivots.
Search Classes—
217—WOODEN RECEPTACLES, subclass 46, Boxes, Crates, Knockdown, Folding, Horizontal and vertical-pivot.
220—METALLIC SHIPPING AND STORING VESSELS, subclass 133, Crates, Knockdown, Folding, Horizontal and vertical pivot.
15. BOXES, KNOCKDOWN, FOLDING, HORIZONTAL-PIVOT. The sides have no hinged connection with each other, but only with the base by horizontal hinges.
Search Classes—
217—WOODEN RECEPTACLES, subclass 47, Boxes, Crates, Knockdown, Folding, Horizontal-pivot.
220—METALLIC SHIPPING AND STORING VESSELS, subclass 132, Crates, Knockdown, Folding, Horizontal-pivot.

CLASS 217—Continued.

16. BOXES, KNOCKDOWN, FOLDING, VERTICAL-PIVOT. The sides have no hinged connection to the base, but to each other by vertical hinges.
Search Class—
217—WOODEN RECEPTACLES, subclass 48, Boxes, Crates, Knockdown, Folding, Vertical-pivot.
17. BOXES, WALLS. Box-walls distinct from the manner of assembling the same, the form of the receptacle, etc.
18. BOXES, CELLS. Compartments identical or similar in form each for holding a single article, as eggs, fruit, bottles, etc. Miscellaneous class containing patents not classified elsewhere in this group.
19. BOXES, CELLS, BOTTLE. Cells peculiarly adapted for holding bottles.
20. BOXES, CELLS, BOTTLE, CORD. Bottle-cells formed by cord or wire partitions.
Search Class—
217—WOODEN RECEPTACLES, subclass 25, Boxes, Cells, Cord.
21. BOXES, CELLS, BOTTLE, PLATE. Bottle-cells formed by cutting openings in a thin plate in which the bottles fit.
Search Class—
217—WOODEN RECEPTACLES, subclass 26, Boxes, Cells, Plate.
22. BOXES, CELLS, BOTTLE, STRIP. Bottle-cells formed of partitions consisting of crossed flat strips.
Search Class—
217—WOODEN RECEPTACLES, subclasses in the group beginning 30, Boxes, Cells, Strip.
23. BOXES, CELLS, BENT. Cells made by bending a strip of flexible material to form one or a series of cells.
24. BOXES, CELLS, CLIP. Cells formed of spring metal, which hold the article with a positive grip.
25. BOXES, CELLS, CORD. Cells formed of crossed cords or wires.
Search Class—
217—WOODEN RECEPTACLES, subclass 20, Boxes, Cells, Bottle, Cord.
26. BOXES, CELLS, PLATE. Openings cut in a thin plate, in which the separate articles are placed.
Search Class—
217—WOODEN RECEPTACLES, subclass 21, Boxes, Cells, Bottle, Plate.
27. BOXES, CELLS, PLATE, CUSHIONED. Plate-cells having cushioning means to prevent breakage or damage to the fragile articles therein.
28. BOXES, CELLS, POCKET. Cells of flexible material forming pocket-like receptacles in which the articles rest.
29. BOXES, CELLS, SEPARABLE. Cells of various kinds, each being separate and detachable from the others.
30. BOXES, CELLS, STRIP. Cells formed of flat strips crossed or otherwise disposed so that each strip forms part of a series of cells.
31. BOXES, CELLS, STRIP, LOCKING. Cell-strips having means by which the strips are secured together to prevent disengagement.
32. BOXES, CELLS, STRIP, LOCKING, ANGULAR. The slits by which the strips are interlocked are angular or otherwise varied from the straight form to provide more positive engagement.
33. BOXES, CELLS, STRIP, LOCKING, BENT. Strips bent to form the cells and locked in position.
34. BOXES, CELLS, STRIP, LOCKING, CUSHIONED. Locking-cells having cushioning means to prevent breakage.
35. BOXES, CELLS, CUSHIONED. Cells having cushioning means of various forms to prevent breakage of the fragile articles held therein.
36. BOXES, CRATES. Miscellaneous crates not classifiable elsewhere.
37. BOXES, CRATES, BICYCLE. Crates by their form peculiarly adapted for holding bicycles.
38. BOXES, CRATES, BICYCLE, FOLDING. Bicycle-crates which can be collapsed or folded into a compact package.

CLASS 217—Continued.

39. **BOXES, CRATES, POULTRY.** Crates for confining and shipping live poultry.
40. **BOXES, CRATES, FRUIT-BOX.** Crates for holding a number of small boxes of fruit, berries, etc.
41. **ABOLISHED.**
42. **BOXES, CRATES, VENTILATING.** Means by which ventilation of the crate and its contents is effected.
43. **BOXES, CRATES, KNOCKDOWN.** Miscellaneous crates which knock down into a compact package.
Search Classes—
 217—WOODEN RECEPTACLES, subclass 12, Boxes, Knockdown.
 220—METALLIC SHIPPING AND STORING VESSELS, subclass 131, Crates, Knockdown.
44. **BOXES, CRATES, KNOCKDOWN, CYLINDRICAL AND BILGE.** Knockdown crates cylindrical or bilge in form, including knockdown barrels.
45. **BOXES, CRATES, KNOCKDOWN, SECTIONAL.** Crates formed by assembling a number of sections, each section being itself a receptacle.
Search Classes—
 217—WOODEN RECEPTACLES, subclass 13, Boxes, Knockdown, Sectional.
 220—METALLIC SHIPPING AND STORING VESSELS, subclass 134, Crates, Knockdown, Sectional.
46. **BOXES, CRATES, KNOCKDOWN, FOLDING, HORIZONTAL AND VERTICAL PIVOT.** Knockdown crates whose walls have a hinged connection with each other to permit folding without complete disengagement. In this subclass each crate has one or more sides hinged to the base by a pivot whose axis is horizontal. To these are hinged the remaining sides on vertical pivots.
Search Classes—
 217—WOODEN RECEPTACLES, subclass 14, Boxes, Knockdown, Folding, Horizontal and vertical pivot.
 220—METALLIC SHIPPING AND STORING VESSELS, subclass 133, Crates, Knockdown, Folding, Horizontal and vertical pivot.
47. **BOXES, CRATES, KNOCKDOWN, FOLDING, HORIZONTAL-PIVOT.** The sides have no hinged connection with each other, but only with the base by horizontal hinges.
Search Classes—
 217—WOODEN RECEPTACLES, subclass 15, Boxes, Knockdown, Folding, Horizontal-pivot.
 220—METALLIC SHIPPING AND STORING VESSELS, subclass 132, Crates, Knockdown, Folding, Horizontal-pivot.
48. **BOXES, CRATES, KNOCKDOWN, FOLDING, VERTICAL-PIVOT.** The sides have no hinged connection with the base, but only with each other by vertical hinges.
Search Class—
 217—WOODEN RECEPTACLES, subclass 16, Boxes, Knockdown, Folding, Vertical-pivot.
49. **BOXES, CRATES, CYLINDRICAL.** Crates which are cylindrical in form.
50. **ABOLISHED.**
51. **BOXES, CRATES, WIRED SLATS.** The sides of the crate are made of slats interwoven with wire.
52. **BOXES, CRATES, CUSHIONED.** Crates having various cushioning means to prevent injury to the contents.
Search Class—
 217—WOODEN RECEPTACLES, subclass 127, Boxes, Bottle-mailing cases.
53. **BOXES, CRATES, CUSHIONED, PADDED.** The cushioning is effected by padding the interior of the crate in various ways.
54. **BOXES, CRATES, CUSHIONED, SPRING.** Crates cushioned by means of springs of various kinds.
55. **BOXES, CRATES, CUSHIONED, SPRING, SPIRAL.** Crates cushioned by means of spiral springs.
56. **BOXES, CLOSURES.** Closures of various forms for wooden boxes and crates.
Note.—Fastening devices for such closures are classified in class 70, LOCKS AND LATCHES, subclass 3, Box-fasteners, except those which are driven into place, which are classified in this class, subclass 70, Boxes, Stays, Driving, and subclass 71, Boxes, Stays, Driving, Wire.
57. **BOXES, CLOSURES, HINGED.** Closures for boxes having hinged connection thereto and mechanism for operating such closures for opening and closing.
Search Class—
 4—BATHS AND CLOSETS, subclass 39, Spittoons, Covered.
58. **BOXES, CLOSURES, HINGED, DISPLAY.** Hinged closures having means for displaying the contents of the box or a sample thereof.
59. **BOXES, CLOSURES, HINGED, SLIDING.** Hinged closures having also a sliding motion in opening or closing the box.

CLASS 217—Continued.

60. **BOXES, CLOSURES, HINGED, SUPPORTS.** Devices forming no part of the hinge for holding open a hinged closure.
61. **BOXES, CLOSURES, HINGED SUPPORTS, DETACHABLE.** Supports having no permanent connection with the box, being readily detachable, so as to be used on others than the original box; also, supports of the above kind having means for holding a label.
62. **BOXES, CLOSURES, SLIDING.** Closures which are opened or closed by a sliding movement.
63. **BOXES, CLOSURES, SLIDING, DISPLAY.** Sliding closures having means for displaying the contents of the box or a sample thereof.
64. **BOXES, FOLLOWERS.** Devices in the nature of movable partitions, usually with means for fastening the same against the contents of a partly-filled box to prevent displacement of such contents.
Search Classes—
 217—WOODEN RECEPTACLES, subclass 86, Barrels, Followers.
 190—BAGGAGE, subclass 36, Trunks, Followers.
65. **BOXES, JOINTS.** Receptacles in which the meeting edges of all the walls, including top and bottom, are modified in various ways or provided with fastening means to secure a firm joint.
Note.—Where the invention resides entirely in the joint and is not peculiarly adapted to boxes, the patent is classified in class 20, WOODEN BUILDINGS, subclass 92, Splices and joints.
66. **BOXES, STRAPS.** Straps of wood or metal for binding the sides of the box firmly together.
67. **BOXES, STRAPS, CORRUGATED.** Straps having strengthening corrugations, flutings, etc.
68. **BOXES, STRAPS, WIRE.** Straps formed of a single wire or a number of wires twisted or woven together.
69. **BOXES, STAYS.** Devices for bracing, strengthening, or protecting the corners and edges of boxes, crates, etc.
Note.—Devices which themselves secure the parts together and which do not merely brace or strengthen a joint already effected by other means are classified in class 20, WOODEN BUILDINGS, subclass 92, Splices and joints.
70. **BOXES, STAYS, DRIVING.** Stays and fastening devices which are fastened in place by driving, having nails, tacks, integral prongs, etc., for that purpose.
Note.—Fastenings in the nature of latches which lock and unlock are classified in class 70, LOCKS AND LATCHES, subclass 3, Box-fasteners.
71. **BOXES, STAYS, DRIVING, WIRE.** Driven stays and fastenings made of wire.
72. **BARRELS.** Miscellaneous class of bilge or staved vessels, including buckets, tubs, etc.
73. **BARRELS, CASES.** Barrels having outside casings for protecting or strengthening purposes.
Search Class—
 220—METALLIC SHIPPING AND STORING VESSELS, subclass 48, Buckets, Jackets.
74. **BARRELS, VENTILATED.** Barrels having means by which ventilation of the interior and contents is effected.
75. **BARRELS, COMPARTMENT.** Barrels having compartments of various kinds.
76. **BARRELS, CLOSURES.** Miscellaneous closures for barrels.
Note.—Devices and means for securing the closure in place are classified under class 70, LOCKS AND LATCHES, subclass 3, Box-fasteners, except those in subclass 89, Barrels, Closures, Fasteners, class 217.
77. **BARRELS, CLOSURES, BRACED.** Barrel-closures having a rod extending from head to head to brace the same.
78. **BARRELS, CLOSURES, EXPANDING.** Closures held in position by expanding part or parts of the head.
79. **BARRELS, CLOSURES, EXPANDING, WEDGE.** Closures expanded by means of a wedge which usually forms part of the closure itself.
80. **BARRELS, CLOSURES, CROZE AND CHAMFER.** Modifications in the croze of the stave and chamfer of the head.
81. **BARRELS, CLOSURES, COVERS.** Temporary closures for use after removal of the original head or closure.
82. **BARRELS, CLOSURES, COVERS, COMPARTMENT.** Covers having a compartment for holding and displaying a sample of the contents of the barrel.
83. **BARRELS, CLOSURES, COVERS, HINGED.** Covers hinged to the chime or having two parts hinged together, one being secured to the chime.
84. **BARRELS, CLOSURES, COVERS, SLIDING.** Covers having a sliding or rotary connection with the barrel or having a sliding or rotating part to disclose the interior of the barrel.

CLASS 217—Continued.

85. BARRELS, CLOSURES, COVERS, WIRE. Covers made of woven wire, usually without fastening means.
86. BARRELS, FOLLOWERS. Partitions parallel to the head and adjustable to keep the solid contents of the barrel from shifting.
87. BARRELS, CLOSURES, GATES. Removable closures for small openings in the head, whereby the contents may be reached without removing the entire head.
88. BARRELS, STAVES. Inventions in the stave alone as distinguished from the barrel as a whole or any other of its parts.
89. BARRELS, CLOSURES, FASTENERS. Devices for securing a chamfered head in the croze, usually of spring metal.
Note.—Other devices for fastening barrel-closures in place are classified in class 70, LOCKS AND LATCHES, subclass 3, Box-fasteners.
90. BARRELS, HOOP-SOCKETS. Barrels and other hooped vessels having the hoops wholly or partially embedded in the walls.
91. BARRELS, HOOPS. Miscellaneous hoops.
Note.—Hoops consisting of a strip, with means for securing the ends together, except for tightening the hoop, are classified in class 24, BUCKLES, BUTTONS, AND CLASPS, subclass 13, Bale and package ties, and subclasses thereunder.
92. BARRELS, HOOPS, ELASTIC. Yielding and contracting hoops to allow expansion and contraction of the vessel.
93. BARRELS, HOOPS, RETAINERS. Devices for retaining the hoop in position and hoops with such devices forming a part thereof.
94. BARRELS, HOOPS, TIGHTENERS. Devices forming a permanent part of the hoop itself for tightening the same.
Note.—Independent machines for performing the same function, to be removed after the hoop is tightened, are to be found in class 100, PRESSES, subclass 15, Baling Articles and Attachments, Bale-band tighteners.
- Search Classes—**
21—CARRIAGES AND WAGONS, subclass 110, Tires, Metallic.
24—BUCKLES, BUTTONS, AND CLASPS, subclass 19, Bale and package ties, Strap-tighteners, for analogous structure.
95. BARRELS, HOOPS, TIGHTENERS, SCREW. Tighteners consisting of a screw mechanism between the ends of the hoop, the tightening being effected by turning a nut or screw-bolt.
- Search Class—**
21—CARRIAGES AND WAGONS, subclass 110, Tires, Metallic.
96. BARRELS, JOINTS. Barrels and other staved vessels having the meeting edges of the staves tongued and grooved or otherwise modified.
97. BARRELS, MOISTENERS. Means for keeping the vessel moist to prevent shrinkage by drying and consequent falling apart of the staves.
98. BARRELS, BUNGS. Miscellaneous bung-hole closures containing patents not classified elsewhere.
99. BARRELS, BUNGS, VALVED. Miscellaneous bungs having valves therein.
100. BARRELS, BUNGS, VALVED, AUTOMATIC. Valved bungs in which the valves operate automatically.
101. BARRELS, BUNGS, VALVED, AUTOMATIC, SAFETY. Valves for relieving excessive pressure within the barrel.
Note.—Safety devices which maintain a uniform pressure in a system of connected barrels are classified in class 195, ALCOHOL, subclass 19, Fermenting, Apparatus, Vent-bungs.
102. BARRELS, BUNGS, VALVED, AUTOMATIC, CONTROLLERS. The action of the valve becomes automatic after the manipulation of a controlling part.
103. BARRELS, BUNGS, VALVED, AUTOMATIC, COLLAPSIBLE. The valve consists of a collapsible tube normally closed.

CLASS 217—Continued.

104. BARRELS, BUNGS, VALVED, AUTOMATIC, FLEXIBLE-DIAPHRAGM. The valve consists, essentially, of a flexible diaphragm of rubber or other material placed over an opening which communicates with the interior of the barrel. When the pressure within falls below atmospheric pressure, the diaphragm is raised or distended, exposing the opening, through which air is admitted into the barrel, thus restoring the equilibrium and permitting the liquid contents to be freely drawn.
105. BARRELS, BUNGS, VALVED, AUTOMATIC, LIQUID-SEAL. Valves of various forms sealed by a liquid.
106. BARRELS, BUNGS, LOCKING. Miscellaneous bungs having means for positively securing the bung in position.
107. BARRELS, BUNGS, LOCKING, BAYONET AND SCREW. Locking means consisting of screw-thread or bayonet fastening of some form.
108. BARRELS, BUNGS, LOCKING, EXPANDING. Locking-bungs in which parts expand into frictional or interlocking engagement with the walls of the hole.
109. BARRELS, BUNGS, LOCKING, EXPANDING, GASKET. Expanding bungs in which a flexible gasket is expanded against the walls of the hole to hold the bung in position or secure a tight joint, or both.
110. BARRELS, BUNGS, PLUGS. Simple plug-like stoppers held in position by frictional contact.
111. BARRELS, BUNGS, PLUGS, FRANGIBLE-DIAPHRAGM. Plugs having a portion to be broken out for venting the barrel, inserting a spigot, etc.
112. BARRELS, BUNGS, EXTRACTORS. Devices for extracting bungs by exerting a direct pull.
Note.—Wrenches for extracting bungs are classified under class 81, TOOLS.
- Search Class—**
65—KITCHEN AND TABLE ARTICLES, subclass 46, Stopper-extractors.
113. BARRELS, BUNGS, BUSHINGS. Bushings for bung holes.
114. BARRELS, BUNGS, PROTECTORS AND CANCELERS. Devices for protecting or canceling a revenue-stamp or other label placed over the bung.
115. ABOLISHED.
116. ABOLISHED.
117. ABOLISHED.
118. ABOLISHED.
119. ABOLISHED.
120. ABOLISHED.
121. ABOLISHED.
122. BASKETS. Miscellaneous wooden-basket structures and parts.
123. BASKETS, BOTTOMS. Inventions in the bottom closure of the basket-body.
124. BASKETS, CLOSURES. Inventions in closures for baskets and means for fastening the same in place.
Note.—Driven fasteners are classified in subclass 70, Boxes, Stays, Driving, this class, and latches in class 70, LOCKS AND LATCHES, subclass 3, Box-fasteners.
125. BASKETS, HANDLES. Inventions in the handle or means for securing it to the body of the basket.
126. BUCKET-EARS. Bucket-ears peculiarly adapted for attachment to a wooden bucket.
127. BOXES, BOTTLE-MAILING CASES. Boxes for packaging bottles for transmission in the mails.

CLASS 218.—BUTTON, EYELET, AND RIVET SETTING.**DEFINITIONS.***Class.*

This class has been divided broadly into "Implements" and "Machines," and these two major subclasses have been further subdivided along analogous lines and corresponding titles have been employed. Under "Implements" are to be found those portable hand devices having no base or bed plate to rest upon, while under "Machines" are to be found the heavier mechanisms which rest upon a bed-plate and are more or less stationary, the work being usually brought to the machine. In many cases complete search will include both the major subclasses.

Subclasses.

0.5. **MACHINES, GANG.** Machines of the types in class 218 having a gang of tools for setting a plurality of rivets, eyelets, lacing studs, or buttons.

1. **MACHINES, RIVETING.** Machines for setting rivets in various kinds of work.

Search Classes—

1—**NAILING AND STAPLING**, subclasses of nail-driving.

218—**BUTTON, EYELET AND RIVET SETTING**, subclass 19, Implements, Riveting.

78—**METAL FORGING AND WELDING**, subclasses 46, Forging, Riveting, and 48, Forging, Riveting machines.

2. **MACHINES, RIVETING, MAGAZINE.** Riveting machines in which the rivets are automatically fed to setting position from a magazine or hopper.

Search Class—

1—**NAILING AND STAPLING**, various subclasses of nail-feeding and magazine nail-driving.

3. **MACHINES, RIVETING, STAPLE.** Riveting machines of general use adapted to set staple-rivets.

Search Class—

1—**NAILING AND STAPLING**, various subclasses of staple-setting machines.

4. **MACHINES, BUTTON.** Miscellaneous button-setting machines.

Search Class—

218—**BUTTON, EYELET AND RIVET SETTING**, subclass 20, Implements, Button.

5. **MACHINES, BUTTON, RIVETING.** Button-setting machines adapted to secure buttons, usually to garments, by rivets which become the button-shanks.

Search Class—

1—**NAILING AND STAPLING**, subclass 19, Machines, Nail-Driving.

6. **MACHINES, BUTTON, RIVETING, MAGAZINE.** Button-setting machines in which the buttons are automatically fed to riveting position from a hopper, chute, or magazine.

Search Class—

1—**NAILING AND STAPLING**, subclasses of nail-feeding and magazine nail or staple machines.

7. **MACHINES, BUTTON, EYE-SHANK, TACK-FASTENER.** Button-setting machines adapted to set eye-shank buttons with a single-prong or tack fastener.

Search Class—

218—**BUTTON, EYELET, AND RIVET SETTING**, subclass 23, Implements, Button, Pliers, Tack Fasteners.

8. **MACHINES, BUTTON, STAPLE-FASTENER, STAPLE MAKING AND SETTING.** Button-setting machines adapted to cut and form staple-fasteners and secure with them eye-shank buttons automatically fed to setting position.

Search Class—

1—**NAILING AND STAPLING**, Staple forming and setting.

9. **MACHINES, BUTTON, STAPLE-FASTENER, THREADING AND SETTING.** Button-setting machines adapted to thread the staple-fastener into the eye-shank of the buttons and then set the staples into the work.

10. **MACHINES, BUTTON, STAPLE-FASTENER, THREADED-BUTTON FEED.** Button-setting machines, in which buttons having their staple-fastener previously threaded into the eye-shanks of the buttons, are automatically fed to setting position and there set into the work.

Search Class—

218—**BUTTON, EYELET AND RIVET SETTING**, subclass 24, Implements, Button, Pliers, Staple Fasteners.

CLASS 218—Continued.

11. **MACHINES, BUTTON, STAPLE-FASTENER, THREADERS.** Machines adapted to thread staple-fasteners into the eye-shanks of buttons to be afterwards set in a threaded-button-setting machine.

12. **MACHINES, BUTTON, BUTTON-FEEDERS.** Machines for arranging buttons in uniform positions to be fed to a button-setting mechanism.

Search Class—

1—**NAILING AND STAPLING**.

13. **MACHINES, BUTTON, TACK-FASTENER FEEDERS.** Machines adapted to arrange one-prong or tack fasteners in uniform positions for a setting-machine.

Search Class—

1—**NAILING AND STAPLING**, subclasses of nail-feeding machines.

14. **MACHINES, EYELETING.** Machines for setting eyelets.

Search Class—

218—**BUTTON, EYELET AND RIVET SETTING**, subclass 25, Implements, Eyeleting.

15. **MACHINES, EYELETING, MAGAZINE.** Eyelet-setting machines in which the eyelets are automatically fed from a magazine or hopper to setting position.

Search Class—

1—**NAILING AND STAPLING**, subclasses of nail-feeding and magazine nail-driving.

15.1. **MACHINES, EYELETING, MAGAZINE, FEEDING.** Devices for feeding eyelets to eyeleting machines.

16. **MACHINES, LACING-HOOK.** Machines for setting shoe lacing hooks or studs.

Search Class—

218—**BUTTON EYELET AND RIVET SETTING**, subclass 26, Implements, Lacing hook.

17. **MACHINES, LACING-HOOK, MAGAZINE.** Lacing-hook machines in which the hooks are automatically fed to setting position from magazines or hoppers.

17.1. **MACHINES, LACING HOOK, MAGAZINE, FEEDING.** Devices for feeding lacing hooks to lacing hook setting machines.

17.2. **MACHINES, GAGES.** Edge gages for machines of the types in class 218, Button, Eyelet, and Rivet Setting.

18. **MACHINES, BUTTON-CARDING.** Machines for setting buttons upon button-cards.

Note.—The machines for sewing buttons on cards are under class 112, **SEWING-MACHINES**.

19. **IMPLEMENTS, RIVETING.** Various implements, including rivet-holders, employed in setting rivets.

Search Class—

218—**BUTTON, EYELET AND RIVET SETTING**, subclass 1, Machines, Riveting.

20. **IMPLEMENTS, BUTTON.** Implements not classifiable in any of the other subclasses of button-setting implements.

Search Class—

218—**BUTTON, EYELET AND RIVET SETTING**, subclass 4, Machines, button.

21. **IMPLEMENTS, BUTTON, RIVETING.** Implements adapted to secure buttons, usually to garments, by rivets which become the button-shanks.

Search Class—

1—**NAILING AND STAPLING**, subclass 47, Implements, Nail-Driving.

22. **IMPLEMENTS, BUTTON, PLIERS.** Implements in the form of a plier.

23. **IMPLEMENTS, BUTTON, PLIERS, TACK-FASTENER.** Button-pliers adapted to secure the button by a single-prong or tack fastener.

Search Class—

218—**BUTTON, EYELET AND RIVET SETTING**, subclass 7, Machines, Button, Eye shank, Tack fastener.

24. **IMPLEMENTS, BUTTON, PLIERS, STAPLE-FASTENER.** Pliers adapted to secure the button to position by a staple fastener.

Search Classes—

1—**NAILING AND STAPLING**, subclass 50, Implements, Staple-Setting, 164, **CUTTING AND PUNCHING SHEETS AND BARS**, subclass 124, **PUNCHES**; 218, **BUTTON, EYELET AND RIVET SETTING**, subclass 10, **MACHINES, BUTTON, Staple-fastener, Threaded button feed**.

CLASS 218—Continued.

25. IMPLEMENTS, EYELETING. Various implements for setting eyelets.
Note.—Punches for making the eyelet-holes without setting the eyelets are elsewhere classified.

Search Class—

218—BUTTON, EYELET AND RIVET SETTING, subclass 14, Machines, Eyeletting.

26. IMPLEMENTS, LACING-HOOK. Devices for setting lacing hooks or studs.

Search Class—

218—BUTTON, EYELET AND RIVET SETTING, subclass 16, Machines, Lacing hook.

CLASS 218—Continued.

27. IMPLEMENTS, BUTTON-DETACHING. Devices for removing buttons, usually shoe-buttons, having metallic fasteners.

28. PACKAGES. Packages of fasteners to be used in button-setting where the package is more than a mere box or container. The fasteners are generally held so that they may be readily discharged into the magazine attached to the button-setting machine, or the package itself may be attached to the machine as the magazine.

Search Class—

1—NAILING AND STAPLING, subclass 56, Packages.

CLASS 219.—ELECTRIC HEATING AND RHEOSTATS.**DEFINITIONS.***Class.*

This class includes all those devices commonly known as electric heaters and rheostats, electric-heating metal-working apparatus, electrically-heated tools and instruments, and resistance elements applicable to either electric heaters or rheostats. Processes are classified with the apparatus unless otherwise indicated by the subclass title.

Devices equipped with electric heating means are classified in the classes to which such devices belong and cross-referenced into this class.

Furnaces which are especially adapted to metallurgical and electrolytic work are classified in class 204, **ELECTROCHEMISTRY**, subclass 64, **Electric furnaces**. Such furnaces are generally characterized by electrical heating means within the chamber containing the material to be heated, the heating means being either an arc, a resistance, the material itself, or a combination of such means, and are further characterized by adaptation for operation on granular material, such as crushed ore, or for handling molten material fusing at a very high temperature, the material in both cases being received immediately within the body of the furnace.

Rheostats which are automatically operated by fluctuations of current are classified in class 171, **ELECTRICITY, GENERATION**, subclass 229, **Regulators, Resistance**.

Rheostats specially constructed for controlling motors are found in class 172, **ELECTRICITY, MOTIVE POWER**, subclass 179, **Hand-operating devices**.

Subclasses.

1. **METAL HEATING AND WORKING.** Devices and processes for electrically heating and working metal. In all cases the apparatus is materially modified by the electric heating means.
2. **METAL HEATING AND WORKING, RIVETING.** Devices and processes for electrically heating and heading rivets or for heading only. The subclass also includes devices and processes for performing the analogous work of heading spokes in hubs and rims of wheels.
3. **METAL HEATING AND WORKING, SHAPING.** Devices which in addition to electrically heating the metal perform some shaping operation, as die-shaping.
4. **METAL HEATING AND WORKING, WELDING.** This subclass and its subdivisions include devices and processes for electrically heating and welding metal.
Note.—The miscellaneous processes are grouped in subclass 10, **Metal heating and working, Welding, Processes**.
Search Class—
140—**WIRE-WORKING**, subclass 112, **Joining wire, Electric welding**.
5. **METAL HEATING AND WORKING, WELDING, RINGS.** Devices and processes for electrically heating and welding rings or annular articles, such as chain-links.
6. **METAL HEATING AND WORKING, WELDING, TUBES.** Devices and processes for electrically heating and welding tubes, whether cross, longitudinal, or spiral weld.
7. **METAL HEATING AND WORKING, WELDING, ARC SYSTEM.** Metal heating and welding devices and processes in which the heat is derived from the electric arc, either alone or from the electric arc and the resistance of the metal. These devices are distinguished from devices in subclass 14, **Metal-heating, arc system**, of this class, by adaptability for performing the additional step of welding.
8. **METAL HEATING AND WORKING, WELDING, ARC SYSTEM, WORK IN CIRCUIT.** The metal is heated by means of the electric arc, which is struck between the two parts to be welded or between the parts to be welded and an electrode.
9. **METAL HEATING AND WORKING, WELDING, ARC SYSTEM, WORK IN CIRCUIT, LIQUID ELECTRODE.** Metal-welding devices and processes in which the metal is heated by means of electric arcs struck between the metal and a surrounding liquid, which may be quiet, as in a tank, or flowing.
10. **METAL HEATING AND WORKING, WELDING, PROCESSES.** Miscellaneous processes for metal heating and welding.
Search Class—
219—**ELECTRIC HEATING AND RHEOSTATS**, subclass 4, **Metal heating and working, Welding**.
11. **METAL-HEATING.** Devices and processes for heating metal electrically. This subclass and its subdivisions are limited to the single step of heating. However, process claims including some metal-working step in general terms have been treated as claims for a process of heating only.

CLASS 219—Continued.**Search Class—**

219—**ELECTRIC HEATING AND RHEOSTATS**, subclasses 1, **Metal heating and working**, and 4, **Metal heating and working, Welding**, and appropriate subdivisions thereof.

12. **METAL-HEATING, SOLDERING.** Devices and processes for soldering in which the solder is electrically melted. Electrically-heated soldering-irons are not included, but are classified in subclass 26, **Heaters, Tools and instruments, Soldering-irons**, and its subdivisions in this class.

Search Classes—

219—**ELECTRIC HEATING AND RHEOSTATS**, subclasses 1, **Metal heating and working**, and 4, **Metal heating and working, Welding**, and appropriate subdivisions thereof; also, 113, **SHEET-METAL WARE, MAKING**, subclass 108, **Soldering, Irons, Capping, Heaters, Electric**.

13. **METAL-HEATING, TRANSFORMER SYSTEM.** The heating-current is supplied through a transformer, which provides a current of large volume and of great heating effect.

Search Class—

219—**ELECTRIC HEATING AND RHEOSTATS**, subclasses 1, **Metal heating and working**, and 4, **Metal heating and working, Welding**, and appropriate subdivisions thereof.

14. **METAL-HEATING, ARC SYSTEM.** The heating means is the electric arc. Both apparatus and processes are included.

Search Class—

219—**ELECTRIC HEATING AND RHEOSTATS**, subclasses 1, **Metal heating and working**, and 4, **Metal heating and working, Welding**, and appropriate subdivisions thereof.

15. **METAL-HEATING, ARC SYSTEM, WORK IN CIRCUIT.** In the devices and processes in this subclass the metal to be heated is included in the circuit and constitutes one electrode.

Search Class—

219—**ELECTRIC HEATING AND RHEOSTATS**, subclasses 1, **Metal heating and working**, and 4, **Metal heating and working, Welding**, and appropriate subdivisions thereof.

16. **METAL-HEATING, ARC SYSTEM, WORK IN CIRCUIT, LIQUID ELECTRODE.** The heating arc or arcs are struck between the metal to be heated and a liquid.

Search Class—

219—**ELECTRIC HEATING AND RHEOSTATS**, subclasses 1, **Metal heating and working**, and 4, **Metal heating and working, Welding**, and appropriate subdivisions thereof.

17. **METAL-HEATING, WORK-HOLDERS.** Elements of electric metal-heating apparatus for holding the metal to be heated.

Search Class—

219—**ELECTRIC HEATING AND RHEOSTATS**, subclasses 1, **Metal heating and working**, and 4, **Metal heating and working, Welding**, and appropriate subdivisions thereof.

18. **METAL-HEATING, WORK-HOLDERS, COOLED.** Work-holders provided with means for cooling them.

Search Class—

219—**ELECTRIC HEATING AND RHEOSTATS**, subclasses 1, **Metal heating and working**, and 4, **Metal heating and working, Welding**, and appropriate subdivisions thereof.

19. **HEATERS.** Electric heaters of general use. Devices commonly known as heaters, but not characterized by features specially adapting them to such use, are classified in this class under subclass 63, **Resistance elements**, and the subdivisions thereunder, or when provided with a plurality of resistances with means for throwing one or more in circuit are classified in this class under subclass 48, **Rheostats**, and the subdivisions thereunder.

20. **HEATERS, SYSTEMS.** Systems of distribution of currents part or all of which is applied to some form of heating apparatus. Generally the specific form of heating apparatus is not of importance.

21. **HEATERS, TOOLS AND INSTRUMENTS.** Hand-tools and instruments provided with electric heating means, such as electrically-heated sad-irons, soldering-irons, branding-irons, cauters, etc. There are included all patents for the combinations of the tools or instruments and the heating means and for heating elements peculiarly adapted to particular tools.

Note.—Patents which cover only the tool and are not in any way limited to the electrical heating means are classified with ordinary tools of the same kind. Patents limited to the heating means are classified in the appropriate subclasses of **Heaters** in this class when the heater is not limited in its use to the tool with which it is shown.

22. **HEATERS, TOOLS AND INSTRUMENTS, HEATERS.** Devices especially adapted to and limited in their use to heating tools. They are either the exclusive heating means or may merely control the supply of the heating-current to the tool, which itself carries the heating element.

CLASS 219—Continued.

23. HEATERS, TOOLS AND INSTRUMENTS, HEATERS, TOOL-CONTROLLED. The heating-current is turned on by placing the tool upon or in the heater or stand.
24. HEATERS, TOOLS AND INSTRUMENTS, HAIR-CURLERS. Curling-irons provided with electric heating means.
25. HEATERS, TOOLS AND INSTRUMENTS, SAD-IRONS. Sad-irons having electric heating means, except those claimed in combination with a stand or switch, which are classified in this class, subclass 23, Heaters, Tools and instruments, Heaters, Tool-controlled.
26. HEATERS, TOOLS AND INSTRUMENTS, SOLDERING-IRONS. Soldering-irons provided with electric heating means.
27. HEATERS, TOOLS AND INSTRUMENTS, SOLDERING-IRONS, SOLDER-FEEDING. Electrically-heated soldering-irons provided with means for feeding solder either from a reservoir or from a reel.
28. HEATERS, TOOLS AND INSTRUMENTS, SOLDERING-IRONS, INDIRECTLY-HEATED. Soldering-irons in which the heating element is distinct from the body of the iron and transmits its heat to the iron.
29. HEATERS, TOOLS AND INSTRUMENTS, BURNING. Devices for severing wood by burning, singeing hair, cauterizing, etc.
30. HEATERS, TOOLS AND INSTRUMENTS, BURNING, BRANDING-STAMPS. Hand-operated electrically-heated branding irons and stamps.
31. HEATERS, TOOLS AND INSTRUMENTS, BURNING, CAUTERS. Electrically-heated thermocauters and pyrographic points.
32. HEATERS, TOOLS AND INSTRUMENTS, BURNING, IGNITERS. Devices characterized by a conductor to be heated to incandescence and used for lighting cigars, gas, sealing-wax, etc. Igniters which utilize the electric spark or merely ignite an inflammable fluid which is the igniting agent are not included, but are classified in class 175, ELECTRICITY, SPECIAL APPLICATIONS.
33. HEATERS, OIL-WELL. Heating devices so shaped that they may be lowered into oil-wells to liquefy matter solidifying in the cooler portions of the well.
34. HEATERS, RADIATORS. That portion of electric heaters commonly known as radiators, which are characterized by means for directing the convection-currents and electric heaters provided with means for reflecting the heat generated.
35. HEATERS, OVENS. Domestic ovens, muffles, molds, cylindrical heaters for the reception of vessels or the material to be heated, etc. It is characteristic of such devices that the heating means be applied to more than one side or that the heated space shall be entirely inclosed, and generally both features are present.
36. HEATERS, OVENS, TUBULAR. Heating-tubes which are open at both ends. In the majority of cases the tube is heated by the passage of the current through it directly; but the subclass also includes devices in which the tube is heated by a resistance external to or embedded in the tube. In some cases the material to be heated is confined in vessels, though generally the material is received directly in the tube or passes through it directly contacting the walls of the tube, as when heating crushed ore.

Search Class—

219—ELECTRIC HEATING AND RHEOSTATS, subclasses 22, Heaters, Tools and instruments, Heaters, and 23, Heaters, Tools and instruments, Heaters, Tool-controlled.

37. HEATERS, RADIATING-PLATE. Electric heaters provided with special radiating-plates. Includes such devices commonly known as radiators, rotating cylinders, such as used in ironing-machines, etc.
38. HEATERS, FLUID. Electric heaters peculiarly adapted to the heating of fluids, either liquids or gases, either at rest or in circulation, and whether for generation of steam or not; but patents for the combination of the electric heating means and elements of the circulating system, as in hot-water or steam heating systems, are not included.

Search Class—

219—ELECTRIC HEATING AND RHEOSTATS, subclasses 43, Heaters, Vessels and stands, and 44, Heaters, Vessels.

39. HEATERS, FLUID, FORCED CIRCULATION. The combination of electric heaters with means for causing the circulation of the fluid to be heated, either a liquid or a gas, and usually include a casing or conduit through which the fluid is forced and in which the heater is located.
40. HEATERS, FLUID, FLUID IN CIRCUIT. The fluid is heated by the passage of the current directly through it.
41. HEATERS, FLUID, IMMERSION. Devices intended to be immersed temporarily in the liquid to be heated and which are not organized parts of the containing vessel.
42. HEATERS, HEATING-FANS. Fans provided with heating elements on the vanes, so as to heat the air moved by the fan.

CLASS 219—Continued.

43. HEATERS, VESSELS AND STANDS. Either combinations of vessels provided with heating means and stands upon which they may be placed to close the circuit or combinations of vessels and stands provided with heating means.
44. HEATERS, VESSELS. Vessels provided with permanently attached heating means.
45. HEATERS, INCANDESCENT-LAMP. Heating devices for various purposes, the heating elements of which are ordinary incandescent lamps.
46. HEATERS, FLEXIBLE. Pads, hot-water bottles, bath-robes, fabrics, etc., provided with conducting-wires either between layers of the fabric or woven into the fabric.
47. HEATERS, INDUCTIONAL. Electric heaters the heating element of which is either the closed secondary of a transformer or some part corresponding to such a secondary or a part made of magnetic material which may be heated by rapid changes of magnetism as well as by induced currents.
48. RHEOSTATS. Resistance devices having a plurality of resistances and means for throwing one or more of the resistances in circuit or a single continuous resistance with means for throwing more or less of the resistance in circuit.
Note.—Mere mounted resistance elements or resistances of particular construction or composition are classified in this class under subclass 63, Resistance elements, and the subdivisions thereunder.
49. RHEOSTATS, LAMP-SOCKET. Rheostats designed for use as parts of incandescent-lamp sockets and claimed in combination with parts of the socket.
50. RHEOSTATS, COMPRESSIBLE. Rheostats having a compressible resistance element and means for compressing it, so as to change its resistance.
51. RHEOSTATS, COMPRESSIBLE, PILE. The resistance element consists of a pile of plates capable of being pressed into more or less intimate contact.
52. RHEOSTATS, COMPRESSIBLE, SPRING. The compressible resistance element is a spring, usually helical.
53. RHEOSTATS, EMBEDDED-RESISTANCE. Rheostats the resistance elements of which are permanently embedded.
54. RHEOSTATS, PILE. Rheostats the resistance element of which consists of a pile of plates and having a sliding contact to engage the edges of the plates, and so throw more or less of them in circuit.
Note.—This subclass is distinguished from subclass 51, Rheostats, Compressible, Pile, by the fact that the resistance is not controlled, except as a matter of initial adjustment, by varying the pressure upon the pile.
55. RHEOSTATS, CONTINUOUS-RESISTANCE. Rheostats the resistance element of which is a single continuous element and having means for throwing a larger or smaller portion of the element into circuit.
56. RHEOSTATS, CONTINUOUS-RESISTANCE, HELIX. The continuous element is a helix.
57. RHEOSTATS, CONTINUOUS-RESISTANCE, LIQUID. The continuous resistance is a liquid.
58. RHEOSTATS, CONTINUOUS-RESISTANCE, PENETRATION. The continuous resistance is of material capable of being penetrated without being permanently perforated, such as a granular material. The resistance in circuit is altered by means of a contact which penetrates the material more or less.

Search Class—

219—ELECTRIC HEATING AND RHEOSTATS, subclass 57, Rheostats, Continuous-resistance, Liquid, for liquid resistance with a penetrating electrode.

59. RHEOSTATS, CONTINUOUS-RESISTANCE, REEL. Rheostats having reels and an intermediate contact over which the resistance is run from one reel to the other.
60. RHEOSTATS, CONTINUOUS-RESISTANCE, TAPERING. The resistance element is wedge-shaped, so that the change in resistance varies unequally for equal advances of the contact.
61. RHEOSTATS, PLUG-BOXES. Resistance-boxes, such as are usually employed in laboratory work, in which the resistances are thrown into or out of circuit by means of a plug or plugs.
62. RHEOSTATS, RECTILINEAR-SLIDE. Rheostats having a contact member movable in a straight line.
Search Class—
219—ELECTRIC HEATING AND RHEOSTATS, subclasses 51, Rheostats, Compressible, Pile; 54, Rheostats, Pile; 55, Rheostats, Continuous-resistance; 56, Rheostats, Continuous-resistance, Helix, and 60, Rheostats, Continuous-resistance, Tapering, if the resistance is a continuous member.
63. RESISTANCE ELEMENTS. Resistance elements of either electric heaters or rheostats. For the most part the patents cover resistances and their mountings, though claims for the resistance alone are included.

CLASS 219—Continued.

64. **RESISTANCE ELEMENTS, EMBEDDED.** The resistance is embedded in material by means of which it is attached to or supported in its mounting.

Search Class—

219—ELECTRIC HEATING AND RHEOSTATS, subclass 53, Rheostats, Embedded-resistance.

65. **RESISTANCE ELEMENTS, EMBEDDED, FLUID.** The resistance is supported in a fluid confined in a casing which radiates the heat either to the air or material in which it is immersed.

Search Class—

219—ELECTRIC HEATING AND RHEOSTATS, subclasses 38, Heaters, Fluid, and 41, Heaters, Fluid, Immersion.

66. **RESISTANCE ELEMENTS, EMBEDDED, GRANULAR.** The resistance element is embedded in comminuted or granular material, such as fire-clay, kaolin, etc.

67. **RESISTANCE ELEMENTS, ENCASED COILS.** The title is self-explanatory.

68. **RESISTANCE ELEMENTS, PILES.** The resistance elements of this subclass consist of piles of plates, bars, etc., which collectively make up single resistances.

Search Class—

219—ELECTRIC HEATING AND RHEOSTATS, subclasses 51, Rheostats, Compressible, Pile, and 54, Rheostats, Pile.

CLASS 219—Continued.

69. **RESISTANCE ELEMENTS, ZIGZAG GRIDS.** The title is self-explanatory.

70. **RESISTANCE ELEMENTS, ZIGZAG HELIX.** The resistance is a helix mounted on a base in zigzag form.

71. **RESISTANCE ELEMENTS, COMPOUND-HELIX.** The resistance element is a helix wound on its support in helical form.

72. **RESISTANCE ELEMENTS, GRANULAR.** The resistance element is comminuted or granular material, such as lamp-black, powdered coke, etc., suitably mounted or incased.

73. **RESISTANCE ELEMENTS, LAMELLAR.** Resistance elements in the form of plates or films.

74. **RESISTANCE ELEMENTS, LAMELLAR, RIBBON.** Resistance made in various shapes from a ribbon, usually metallic.

75. **RESISTANCE ELEMENTS, CARBON.** The resistance element is carbon in solid form.

76. **RESISTANCE ELEMENTS, COMPOSITION.** Resistances of particular composition or the compositions.

CLASS 224.—PACKAGE AND ARTICLE CARRIERS.

DEFINITIONS.

Class.

The inventions included within this class are themselves specially adapted to be supported upon some person or object.

The carrying feature predominates. Lifters and grapples are excluded because the hoisting or lifting feature is considered to control.

The articles carried also affect the classification for the same reason. Holders for bouquets, tickets, and other small objects of personal wear or use are excluded because they are carried for the use only and not with the idea of transportation.

Subclasses.

1. WEAPON. Miscellaneous protectors and supporters for weapons while they are being carried.

2. WEAPON, SHEATHS AND SCABBARDS. Protectors or supports in the form of a cover or case.

Note.—Protecting-cases do not strictly come within the main class title, but are included here on account of their similarity to the supporting-cases.

3. WEAPON, SHEATHS AND SCABBARDS, HANGERS. Fastenings by which connection is made with the belt.

Search Class—

224—PACKAGE AND ARTICLE CARRIERS, subclass 2, Weapon, Sheaths and scabbards.

4. WATCH AND CLOCK. The title is self-explanatory.

5. BODY AND BELT ATTACHED. Package and article carriers formed as articles of clothing or directly or indirectly attached to or supported from the body.

Note.—The guards and holders found in class 24, BUCKLES, BUTTONS, CLASPS, ETC., are generally for eyeglasses, bouquets, tickets, and other small articles carried more for personal use and convenience than for transportation. Chatelaine-hooks are classified in class 24, BUCKLES, BUTTONS, CLASPS, ETC., unless the support used therewith is specified further than as a mere ring or hook.

Search Class—

135—TENTS, CANOPIES, UMBRELLAS, AND CANES, subclass 12, Canopy supports, Body harness.

6. BODY AND BELT ATTACHED, BABY OR PATIENT. Means for supporting a person.

7. BODY AND BELT ATTACHED, GAME. Hunting and fishing appurtenances in which the game is carried.

8. BODY AND BELT ATTACHED, KNAPSACK. Bags or cases for articles of personal wear and use.

9. BODY AND BELT ATTACHED, KNAPSACK, CONVERTIBLE. Knapsacks adapted to be changed into other articles.

10. BODY AND BELT ATTACHED, KNAPSACK, CONVERTIBLE, TENT. Knapsacks convertible into a tent.

11. BODY AND BELT ATTACHED, KNAPSACK, SLINGS WITH BELTS. Both modes of attachment are used.

12. BODY AND BELT ATTACHED, KNAPSACK, SLINGS. The suspension is in the form of a sling.

Search Class—

224—PACKAGE AND ARTICLE CARRIERS, subclass 11, Body and belt attached, Knapsack, Slings with belts.

13. BODY AND BELT ATTACHED, CARTRIDGE. These devices hold cartridges or caps.

Note.—Cases in which cartridges are handled upon the field or stored are included here even though not strictly carriers.

14. BODY AND BELT ATTACHED, CARTRIDGE, GARMENT-ATTACHED. The carrier is fastened to the garment. Note.—Where there is further modification of the garment than to make it a suitable support for the cartridges, it is classified in class 2, APPAREL.

Search Class—

224—PACKAGE AND ARTICLE CARRIERS, subclass 15, Body and belt attached, Cartridge, Magazine.

15. BODY AND BELT ATTACHED, CARTRIDGE, MAGAZINE. Cartridges are held in a receiver and are fed successively to a point where they are delivered to the user.

16. BODY AND BELT ATTACHED, CARTRIDGE, MAGAZINE, LONGITUDINAL FEED. The cartridge is fed in the direction of its length.

CLASS 224—Continued.

17. BODY AND BELT ATTACHED, CARTRIDGE, COMPARTMENT. Each subdivision of the carrier holds a number of cartridges.

Note.—Tubular compartments each holding more than one cartridge are found in this class, subclasses 16, Body and belt attached, Cartridge, Magazine, Longitudinal feed, and 20, Body and belt attached, Cartridge, Block-cell.

18. BODY AND BELT ATTACHED, CARTRIDGE, REVOLVING. The carrier revolves to bring the cartridges successively to an accessible position.

19. BODY AND BELT ATTACHED, CARTRIDGE, TILTING POCKET. The cartridge-holding pocket turns from the storage position to one in which all the cartridges are easily accessible.

20. BODY AND BELT ATTACHED, CARTRIDGE, BLOCK-CELL. Cells formed by holes in a solid block.

21. BODY AND BELT ATTACHED, CARTRIDGE, INDIVIDUAL HOLDERS. Means of separating cartridges within the carrier-box. There are also included separate holders which are not belt-attached.

22. BODY AND BELT ATTACHED, CARTRIDGE, BELT OR SLING. The belt or sling forms the support to which cartridge-holding devices are attached.

Search Class—

224—PACKAGE AND ARTICLE CARRIERS, subclass 2, Weapon, Sheaths and scabbards.

23. BODY AND BELT ATTACHED, CARTRIDGE, BELT OR SLING, LOOP AND POCKET HOLDERS. The loops and pockets are arranged to hold each a cartridge or an organized group of cartridges.

Search Class—

224—PACKAGE AND ARTICLE CARRIERS, subclass 22, Body and belt attached, Cartridge, Belt or sling.

24. BODY AND BELT ATTACHED, CARTRIDGE, BELT OR SLING, LOOP AND POCKET HOLDERS, SKELETON. The loop consists of a light open holder, usually in spring form.

25. BODY AND BELT ATTACHED, BRACKET. The carrier projects from the body in the form of a bracket.

Note.—Hods for plasterers' use are classified in class 72, MASONRY AND CONCRETE STRUCTURES, subclass 134, Implements, Hods.

26. BODY AND BELT ATTACHED, BAG, CASE, OR FRAME. The bags are attached to the belt either directly or by chatelaine.

27. BODY AND BELT ATTACHED, BAG, CASE, OR FRAME, CHATELAINE. The suspensions are of the chatelaine type, claimed either independently or in combination with the bag.

Note.—Hooks for this type of suspension are classified in class 24, BUCKLES, BUTTONS, CLASPS, ETC., subclass 4, Article-holders, Chatelaine safety-hooks.

28. BODY AND BELT ATTACHED, HAND OR WRIST ATTACHED. A ring or band secures the device to the hand or wrist.

Note.—Blotters, erasers, and other like articles of stationery remain in class 120, STATIONERY, even the hand-attached.

29. VEHICLE. These are detachable carriers for use with a vehicle. Note.—Where the structure of the vehicle is modified to accommodate the carrier the classification is with the vehicle.

Search Class—

208—VELOCIPEDES, subclass 45, Carrier.

30. VEHICLE, BICYCLE. The structures are intended for attachment to bicycles.

Search Classes—

224—PACKAGE AND ARTICLE CARRIERS, subclasses 4, Watch and clock, and 1, Weapon.

208—VELOCIPEDES, subclasses 24, Child's seats, and 45, Carrier; in subclass 45, Carrier, the carriers modify the construction of the vehicle or are mounted upon separate wheels.

31. VEHICLE, BICYCLE, CONVERTIBLE AND COMBINED Structures intended to be used also for another purpose.

32. VEHICLE, BICYCLE, RECEIVERS. Bags, baskets, boxes, cases, etc., which inclose or partly inclose the articles carried.

33. VEHICLE, BICYCLE, RECEIVERS, COLLAPSIBLE-FRAME. The frame of the receiver is collapsible.

CLASS 224—Continued.

34. VEHICLE, BICYCLE, RECEIVERS, WRAPPER. The articles to be carried are inclosed within a wrapper which forms part of the carrier.

Search Class—

150—CLOTH, LEATHER, AND RUBBER RECEPTACLES, subclass 52, Covers and cases.

35. VEHICLE, BICYCLE, RECEIVERS, FORWARD-REACH SUPPORTED. The receiver is attached to the bicycle forward reach.

36. VEHICLE, BICYCLE, RECEIVERS, HANDLE-BAR SUPPORTED. The receiver is attached to the bicycle handle-bar.

37. VEHICLE, BICYCLE, SPRING-HOLDERS. The packages are held by spring-pressed clamping members.

38. VEHICLE, BICYCLE, SPRING-HOLDERS, FRAME. The clamping parts are frames.

39. VEHICLE, BICYCLE, BRACKET. The support is in the form of a bracket.

Search Class—

224—PACKAGE AND ARTICLE CARRIERS, subclasses 32, Vehicle, Bicycle, Receivers, and 33, Vehicle, Bicycle, Receivers, Collapsible-frame.

40. VEHICLE, BICYCLE, BRACKET, FOLDING. The bracket can be folded to reduce the bulk when it is not in use.

41. VEHICLE, BICYCLE, BRACKET, HANDLE-BAR SUPPORTED. The bracket is fastened to the handle-bar.

Search Class—

224—PACKAGE AND ARTICLE CARRIERS, subclass 30, Vehicle, Bicycle.

42. VEHICLE, BICYCLE, HOOKS. The package is suspended from a hook.

Note.—Most of the brackets supporting lamps from bicycles are capable of use also as hooks for package support.

Search Class—

240—ILLUMINATION, subclass 58, Light supports, Vehicle, Bicycle.

43. SADDLE-BAGS. The bags are arranged to rest upon or depend from the back of an animal. Ordinarily there are two distinct bags connected by a strap or by straps.

44. SADDLE-BAGS, TRAVELING-BAG. The structures can be used as traveling-bags.

Search Classes—

224—PACKAGE AND ARTICLE CARRIERS, subclass 47, Hand, Traveling-bags.

190—BAGGAGE, subclass 41, Traveling-bags.

45. HAND. Hand-supported carriers coming within the main class purpose, except those otherwise thereunder classified.

Note.—Traveling-bags are found in class 190, BAGGAGE, subclass 41, Traveling-bags, and in the subclasses thereunder.

Hand-carriers intimately associated with hoisting features are found in class 57, HOISTING; subclasses 9, Grapples; 109, Lifters, Barrel and box; 111, Lifters, Spittoon; 112, Lifters, Spool, and 113, Lifters, Store-goods.

Search Classes—

224—PACKAGE AND ARTICLE CARRIERS, subclass 28, Body and belt attached, Hand or wrist attached.

21—CARRIAGES AND WAGONS, subclass 88, Hand-barrows, for package and article carriers designed to be carried by two persons.

CLASS 224—Continued.

46. HAND, CONVERTIBLE AND COMBINED. The carrier is capable of use for or of change into some other device.

47. HAND, TRAVELING-BAG. Rigid-sided open-ended frames as well as inclosing cases.

Search Classes—

224—PACKAGE AND ARTICLE CARRIERS, subclass 44, Saddle-bags, Traveling-bag.

190—BAGGAGE, subclass 41, Traveling-bags.

48. HAND, TRAY. Trays supported from a single handle and such double-handle trays as have compartments for individual articles.

49. HAND, SLING. The articles rest in a flexible band of considerable width which is not strapped about them.

50. HAND, HANDLE AND CLAMPING PLATES. The articles carried are usually books and are held between flat plates.

51. HAND, HANDLE AND CLAMPING PLATES, STRAP-TIGHTENER. There is a positive means of tightening the strap.

Search Class—

224—PACKAGE AND ARTICLE CARRIERS, subclass 54, Hand, Handle, bar, and strap, Strap-tightener.

52. HAND, HANDLE, BAR, AND STRAP. The straps are secured to a bar which in turn is supported by the handle.

Search Class—

224—PACKAGE AND ARTICLE CARRIERS, subclass 46, Hand, Convertible and combined.

53. HAND, HANDLE, BAR, AND STRAP, HARNESS. End straps or cross connections, together with the usual straps, constitute a harness.

54. HAND, HANDLE, BAR, AND STRAP, STRAP-TIGHTENER. There is a positive means of tightening the strap.

Search Class—

224—PACKAGE AND ARTICLE CARRIERS, subclass 51, Hand, Handle and clamping plates, Strap-tightener.

55. HAND, HANDLE AND STRAP. The handle supports the package by a surrounding flexible binding material.

56. HAND, HANDLE AND STRAP, CORD OR CHAIN. A binding material of approximately circular section is used to secure the package, and the handle is made of or is adapted to use with this material.

Note.—Fasteners for the packages are found in class 24, BUCKLES, BUTTONS, CLASPS, ETC.; subclasses 17, Bale and package ties, Packet-holders, and 18, Bale and package ties, Packet-holders, Cord.

57. HAND, HANDLE AND STRAP, CORD OR CHAIN, CORD-HOOK. The handle is itself grooved to act as a hook or has depending hooks in which the cord fastening a package may be inserted. The hooks do not primarily form the fastening for the cord.

58. HAND, HANDLE AND STRAP, STRAP-LOOP. Inventions in the formation of the depending parts of the handle to receive the strap.

Search Classes—

224—PACKAGE AND ARTICLE CARRIERS, subclass 55, Hand, Handle and strap.

190—BAGGAGE, subclass 59, Traveling-bags, Strap-loop fasteners.

CLASS 229.—PAPER RECEPTACLES.**DEFINITIONS.***Class.*

This class includes all receptacles the peculiarities of the construction of which are due to the fact that they are made of paper, and also some in which the material is uncertain, but the structure is of the character generally found in those made of paper.

Subclasses.

1. **VESSELS, MISCELLANEOUS.** Miscellaneous paper receptacles not otherwise classifiable.
2. **VESSELS, ANGULAR.** Paper vessels of angular form not otherwise classifiable.
3. **VESSELS, CYLINDRICAL.** Paper vessels, not otherwise classifiable, of cylindrical form.
4. **VESSELS, CYLINDRICAL, PRESSED.** Cylindrical paper vessels formed by molding the plastic material in dies.
5. **VESSELS, LIQUID-PROOFED.** Vessels coated with some composition to render them impervious to liquid.

Search Class—

- 91—COATING, subclasses 68, Processes and 70, Processes, with heat.
6. **BOXES.** Miscellaneous boxes in which the invention does not lie in the construction of a cut and folded blank.
 7. **BOXES, DISPENSING.** Boxes of the character above mentioned in which the invention lies in some construction of the box or some attachment thereto especially designed to facilitate the removal of the contents.
 8. **BOXES, ORNAMENTAL.** Boxes of the character above described in which the invention is solely in making them of an ornamental character.
 - 8.5. **BOXES, SAVINGS.** An auxiliary opening here permits the insertion of coins, tokens, or other objects to be saved without opening the box.
 9. **BOXES, SLIDE.** Boxes of the character above mentioned in which a shell receives a sliding tray.
 10. **BOXES, SLIDE, COMPARTMENT.** A slide-box of the character above mentioned which is divided into compartments.
 11. **BOXES, SLIDE, DISPENSING.** Sliding boxes in which the invention lies in some construction for facilitating the removal of the contents.
 12. **BOXES, CYLINDRICAL.** Boxes of the character above described of cylindrical form.
- Search Class—**
229—PAPER RECEPTACLES, subclass 93, Tubes, Cylindrical.
13. **BOXES, CYLINDRICAL, PRESSED BOTTOMS AND TOPS.** Bottoms and tops for cylindrical boxes made by pressing the material in dies.
 14. **BOXES, LINED.** Boxes of the character above described which are lined with various materials.
 15. **BOXES, COMPARTMENT.** Boxes of the character above mentioned which are divided into separate compartments. Includes paper cells.
 16. **FOLDED-BLANK BOXES.** Miscellaneous cut and folded blanks for making a box.
 17. **FOLDED-BLANK BOXES, DISPENSING.** Folded-blank boxes in which the invention lies in a construction specially adapted to facilitate access to the contents.
 18. **FOLDED-BLANK BOXES, SECTORS.** A form of folded-blank box which is made in the form of a sector for the purpose of enabling a number of the boxes to be packed together in a cylindrical or conical receptacle.
 19. **FOLDED-BLANK BOXES, SLIDE.** Boxes in which the invention lies in the formation and folding of the blank for making a sliding box.
 20. **FOLDED-BLANK BOXES, SLIDE, DISPENSING.** Folded-blank sliding boxes in which the construction involved is intended especially to facilitate the removal of the contents.
 21. **FOLDED-BLANK BOXES, CYLINDRICAL.** A folded-blank box of cylindrical form.
 22. **FOLDED-BLANK BOXES, TRIANGULAR.** Folded-blank boxes which are of triangular or pyramidal form.
 23. **FOLDED-BLANK BOXES, MULTIPLE.** A folded-blank box made up of more than one blank. The blanks are generally placed crosswise of each other and may or may not be secured together.

CLASS 229—Continued.

24. **FOLDED-BLANK BOXES, BUCKETS.** Folded-blank boxes which are provided with handles like a bucket. As a usual thing the handle, consisting of a wire, is used as a fastening means for holding the parts of the blank together.
 25. **FOLDED-BLANK BOXES, BUCKETS, CLOSURES.** Folded-blank buckets in which the invention lies in the means for closing the top of the bucket, the cover being separate from the blank.
 26. **FOLDED-BLANK BOXES, BUCKETS, CLOSURES, INTEGRAL-COVER.** Folded-blank buckets which have a cover integral with the remainder of the blank.
- Search Class—**
229—PAPER RECEPTACLES, subclasses 16, Folded-blank boxes, and 31, Folded-blank boxes, Trays, Corner-folds.
27. **FOLDED-BLANK BOXES, COMPARTMENT.** Boxes made from a folding blank and which are divided by partitions.
 28. **FOLDED-BLANK BOXES, COMPARTMENT, CELLS.** A series of cells formed from blanks or a box formed from a blank around the sides of a cell series.
 29. **FOLDED-BLANK BOXES, COMPARTMENT, CELLS, WRAPPER.** A series of cells formed from blanks and secured to a wrapper which is folded over and completely covers the cells.
 30. **FOLDED-BLANK BOXES, TRAYS.** A folded-blank box of special form in which the sides are folded up around the bottom of the box as the basis, the corners of the folded-up portions being secured together to preserve its form.
 31. **FOLDED-BLANK BOXES, TRAYS, CORNER-FOLDS.** Folded-blank trays in which the corners are formed by folding in a portion of the adjoining sides and securing the fold to one of the sides.
- Search Class—**
229—PAPER RECEPTACLES, subclasses 24, Folded-blank boxes, Buckets; 25, Folded-blank boxes, Buckets, Closures, and 26, Folded-blank boxes, Buckets, Closures, Integral-cover.
32. **FOLDED-BLANK BOXES, TRAYS, CORNER-FLAPS.** Folded-blank trays in which the corner is formed by cutting a flap instead of folding in the material.
 33. **FOLDED-BLANK BOXES, TRAYS, CORNER-FLAPS, COVER EXTENSION.** Folded-blank trays having corner-flaps and also an integral extension to the blank from which the cover is constructed.
 34. **FOLDED-BLANK BOXES, TRAYS, CORNER-FLAPS, INFOLDING SIDE.** A folded-blank tray in which two of the sides have corner-flaps folded inward and secured by folding over an extension of the other two sides.
 35. **FOLDED-BLANK BOXES, TRAYS, CORNER-FLAPS, INTERLOCKING.** A folded-blank tray provided with corner-flaps which are notched and slit in such a manner as to interlock with each other.
 36. **FOLDED-BLANK BOXES, TRAYS, CORNER-FLAPS, INTERLOCKING, COVER EXTENSION.** Folded-blank trays having corner-flaps which interlock and also having an extension of the blank from which the cover is constructed.
 37. **FOLDED-BLANK BOXES, TUBES.** Miscellaneous folded-blank boxes in which the four sides of the box are folded up from a blank and joined together with a single seam, the ends of the box or top and bottom being formed by flaps extending from the side pieces.
 38. **FOLDED-BLANK BOXES, TUBES, CLOSURES, INSERTED FLAPS.** Folded-blank boxes of the tube type in which the invention lies in the formation of a closure having inserted flaps for securing it.
 39. **FOLDED-BLANK BOXES, TUBES, CLOSURES, INSERTED FLAPS, INTERLOCKING.** Folded-blank tubes in which the closure is made by means of interlocking parts which prevent the flaps from being withdrawn too readily.
 40. **FOLDED-BLANK BOXES, WRAPPERS.** Blanks similar to those from which folded-blank boxes are made but of light paper and held in place by being folded up around an article.
 41. **BOXES, COLLAPSIBLE.** Boxes not involving the construction of a blank but which are collapsible into flat form.
- Search Class—**
229—PAPER RECEPTACLES, subclasses 37 Folded-blank boxes, Tubes; 38, Folded-blank boxes, Tubes, Closures, Inserted flaps, and 39, Folded-blank boxes, Tubes, Closures, Inserted flaps, Interlocking.
42. **BOXES, DIVISION-PLATES.** Boxes provided with longitudinal division-plates for separating layers of materials to be packed therein. Many of these have means for holding confectionery in position on the division-plates.

CLASS 229—Continued.

43. **BOXES, CLOSURES.** Boxes of the character above specified, where the invention lies wholly in the means for closing the same.
44. **BOXES, CLOSURES, HINGED.** Inventions in a box-closure of the hinged form.
45. **BOXES, CLOSURES, FASTENERS.** Boxes in which the invention does not lie in the construction of the blank, but is in a closure which is provided with fastening means.
46. **BOXES, CLOSURES, FASTENERS, CORD.** Box-closures in which the fastening means is a cord.
47. **BOXES, CLOSURES, FASTENERS, METALLIC.** Box-closures which include metallic fastening devices.
Search Classes—
 229—PAPER RECEPTACLES, subclass 78, Envelops, Closures, Fasteners, Metallic.
 70—LOCKS AND LATCHES, subclass 101, Seals, Box strap.
48. **BOXES, SEAMS.** Inventions in the structure of the seam for joining the parts.
49. **BOXES, STAYS.** Inventions in devices for staying or strengthening the corners of the box.
Search Classes—
 20—WOODEN BUILDINGS, subclass 92, Splices and joints.
 217—WOODEN RECEPTACLES, subclass 69, Stays, and subclasses thereunder.
50. **BOXES, STAYS, CORD.** Boxes having their corners secured by means of a cord.
51. **BOXES, OPENERS, RIPPING.** Means for opening the box by tearing out a cord or some other device for facilitating the ripping of a portion of the box.
Search Class—
 229—PAPER RECEPTACLES, subclasses 85, Envelops, Openers, and 86, Envelops, Openers, Cord.
52. **BOXES, HANDLES.** Construction of handles to be applied to boxes.
53. **BAGS.** Paper bags not otherwise classified.
54. **BAGS, SACHEL.** A form of bag which is shaped like a satchel opens in the same manner, and is provided with a handle.
Search Class—
 190—BAGGAGE, subclass 43, Traveling bags, Frameless and folding.
55. **BAGS, REINFORCED.** Bags which are provided with a reinforce.
56. **BAGS, COMPARTMENT.** Bags separated into two or more compartments by partitions.
57. **BAGS, BOTTOMS.** Inventions in the construction or formation of the bottom of the bag, except those classified in other subclasses of this group.
58. **BAGS, BOTTOMS, SQUARE.** A bag formed from a paper tube having a bellows fold in the sides, the end of the tube being closed by a gummed flap and the sides tucked in at the lower corners. On filling the bag or compressing it endwise a square bottom is formed.
59. **BAGS, BOTTOMS, SQUARE, CORNER-SLITS.** Construction of square-bottomed bags, where the corners are slit in order to avoid the necessity of folding.
60. **BAGS, BOTTOMS, SQUARE, DIAMOND-FOLD.** Square-bottomed bags in which the bottom is folded into diamond form with a seam across the bottom running parallel with the edges of the bags, the ends of the diamond being then folded together and pasted.
1. **BAGS, BOTTOMS, SQUARE, SEAMLESS.** A square-bottomed bag in which the bottom is formed at the middle of the blank, the seams extending along the edges of the bag and the bottom being therefore without the longitudinal seam which is characteristic of the diamond fold.
62. **BAGS, CLOSURES.** Means for closing the mouth of the bag, which means is not of the character provided for in other subclasses.
63. **BAGS, CLOSURES, CORD.** Bag-closures which are secured by means of a cord.
64. **BAGS, CLOSURES, FLUTED.** Closures in which the upper end of the bag is crimped or fluted to facilitate closing.
65. **BAGS, CLOSURES, METALLIC.** A bag-closure in which the fastening is effected by the aid of metallic fasteners, generally by a strip of soft metal which is folded over the edges of the bag to secure it.
Search Class—
 229—PAPER RECEPTACLES, subclass 78, Envelops, Closures, Fasteners, Metallic.
66. **BAGS, OPENING.** Devices for readily opening a bag.
67. **BARRELS.** Paper barrels having a curved bilge.
68. **ENVELOPS.** Miscellaneous envelopes, does not include those in which the invention lies in the formation and folding of the blank. An envelop is distinguished from a bag by a closure of the folding-flap form.

CLASS 229—Continued.

69. **ENVELOPS, COIN.** Envelops with special provisions for holding coin in place and preventing their escape in transmission.
70. **ENVELOPS, COUPON.** Envelops having a coupon attached and intended principally for sending goods by express.
71. **ENVELOPS, DISPLAY.** Envelops having openings through which the contents may be seen.
72. **ENVELOPS, POCKET.** An envelop provided with a separate pocket in its side.
73. **ENVELOPS, RETURN.** Envelops which are adapted to be folded into a different form in order that they may be used to return an answer.
74. **ENVELOPS, TAG.** Envelops constructed to be used in the manner of a tag for attachment to goods.
75. **ENVELOPS, BLANKS.** Inventions in the cut and folded blank for forming an envelop.
Search Class—
 229—PAPER RECEPTACLES, subclass 76, Envelops, Closures, and subclasses thereunder.
76. **ENVELOPS, CLOSURES.** Inventions wholly in the means for closing the mouth of the envelop.
77. **ENVELOPS, CLOSURES, FASTENERS.** Inventions in a closure having some special means of fastening.
78. **ENVELOPS, CLOSURES, FASTENERS, METALLIC.** Envelops having closures provided with a metallic fastener.
Search Class—
 229—PAPER RECEPTACLES, subclass 65, Bags, Closures, Metallic.
79. **ENVELOPS, CLOSURES, FASTENERS, SEAL.** Envelops in which the closure is effected by sealing-wax or other adhesive form of seal. Also some in which a fastener is protected by means of a seal.
80. **ENVELOPS, CLOSURES, SEALING.** Inventions in some special mode of closing the envelop by means of an ordinary gummed flap.
81. **ENVELOPS, CLOSURES, SEALING, PERFORATED.** Inventions in a closure of the gummed type, but in which there are perforations for the purpose of preventing the opening of the envelop without detection.
82. **ENVELOPS, CLOSURES, SEALING, TONGUES.** Inventions in a closure of the gummed flap form, which is provided with a tucked-in tongue.
83. **ENVELOPS, CLOSURES, SEALING, SOLUBLE-DYE.** Envelops having sealing-flaps which are printed with or have concealed in them a soluble dye which spreads if the envelop is tampered with by the use of water or steam.
84. **ENVELOPS, CLOSURES, TONGUE.** Envelops wherein the closing is effected simply by a tucked-in tongue with no sealing-flap.
85. **ENVELOPS, OPENERS.** Envelops provided with special means for facilitating opening.
Search Class—
 229—PAPER RECEPTACLES, subclass 51, Boxes, Openers, Ripping.
86. **ENVELOPS, OPENERS, CORD.** Envelops in which the opening is effected by means of a ripping cord.
Search Class—
 229—PAPER RECEPTACLES, subclass 51, Boxes, Openers, Ripping.
87. **WRAPPERS.** Sheets of paper cut in suitable shape for wrapping goods.
Search Class—
 154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 54, Fabrics, Yielding, and subclasses thereunder.
88. **WRAPPERS, BAG.** Wrappers made up into a special form of bag to be used for wrapping an article of merchandise.
89. **WRAPPERS, BOTTLE.** Paper coverings fitted around bottles to prevent breakage when packed for shipment.
90. **WRAPPERS, BOTTLES, CORRUGATED.** Paper wrappers which are crimped, so as to produce a thick and elastic wrapping to prevent breakage.
91. **WRAPPERS, BOTTLE, PADDED.** Paper wrappers for bottles, which are thickened by means of padding material placed between the layers of the wrapper.
92. **WRAPPERS, MAILING-SHEETS.** Wrappers for newspapers or for general mailing purposes.
93. **TUBES, CYLINDRICAL.** Paper tubes having open ends and intended generally for mailing drawings and similar articles.
Search Class—
 229—PAPER RECEPTACLES, subclass 12, Boxes, Cylindrical

CLASS 231.—WHIPS AND WHIP APPARATUS.

DEFINITIONS.

Class.

This class includes apparatus peculiar to the manufacture of whips and also novel forms of whips.

Subclasses.

1. WHIP-MACHINES. Machines peculiar to whip manufacture, mostly rolling, pressing, and shaping machines.

Search Classes—

28—CORDAGE, subclasses 4, Braiding, for plaiting, and shaping machines, and 21, Cord and rope machines, for twisting machines.

69—LEATHER MANUFACTURES, subclass 9, Machines, Skiving and splitting, for leather splitting and skiving machines.

2. WHIPS. Whips for riding and driving; also, some whip-goads.

CLASS 231—Continued.

3. WHIPS, CONVERTIBLE WHIPS AND CANES. Whips that can be readily converted into walking-canes.

4. WHIPS, LASHES. Lashes or snaps for whips.

Search Class—

28—CORDAGE, subclass 25, Braids where the novelty resides in a peculiar braid or plat.

5. WHIPS, LASH AND SNAP FASTENINGS. Means for fastening the lash or snap to the whip stock or handle.

6. WHIPS, CAPS, BUTTONS, AND JOINTS. Caps, ferrules, or buttons and whip-joints.

Search Classes—

43—FISHING AND TRAPPING, subclass 16, Fishing-rods.

135—TENTS, CANOPIES, UMBRELLAS, AND CANES, subclass 45, Canes and sticks.

CLASS 232.—DEPOSIT AND COLLECTION RECEPTACLES.**DEFINITIONS.***Class.*

The general characteristics of the types of receivers here included are that they are emptied through openings different from those through which they are filled, that they receive at intervals and are emptied or discharged in bulk, and that they are intended to be filled and emptied by different persons. These need not all be present in each case.

Receptacles for garbage are classified in class 220, METALLIC SHIPPING AND STORING VESSELS, subclass 115, Receptacles, Garbage, and subclasses thereunder.

Subclasses.

1. MISCELLANEOUS. Deposit and collection receptacles not otherwise classifiable.
2. BALLOT-BOXES. Receptacles for tickets or tokens to represent the votes cast.
3. BALLOT-BOXES, BALL. The tokens used are in the form of balls.
4. SAVINGS-BOXES. Miscellaneous money boxes or banks in which the money is inserted through a slot or other small opening. They are portable, but, as distinguished from portable fare-boxes, are not provided with such handles as facilitate their presentation to others by the holder for coin insertion.
Note.—When the box is essentially a toy, as by reason of a fanciful shape or an amusement feature, it is classified in class 46, GAMES AND TOYS, subclass 36, Toy money-boxes.
5. SAVINGS-BOXES, INSPECTION. The construction or material permits examination of the contents without opening the box.
6. SAVINGS-BOXES, FRAME-FASTENINGS. The inventions modify the box structure to provide retaining means for the several parts.
7. FARE-BOXES. Receivers for tickets, coins, or tokens which represent the fare and which are inserted through a slot or other small opening. This subclass contains such fare-boxes as are not otherwise herein classified.
Note.—Where the term "coin" is used hereinafter, it is intended to refer also, when suitable, to tickets or other tokens.
8. FARE-BOXES, TICKET PUNCHING AND CANCELING. The tickets are mutilated as they are introduced into the device.
9. FARE-BOXES, MULTIPLE COIN SLOT AND RUNWAY. A series of slots permits insertion of coins at any one of a number of points into a common runway.
10. FARE-BOXES, TICKET AND CHANGE. The boxes are subdivided to hold tickets and money.
11. FARE-BOXES, TICKET, CAR. The ticket-holders are attached to the car or seat-frame and are particularly adapted for car use.
12. FARE-BOXES, RECEIVERS. Inventions relating to the boxes, bags, etc., in which the coins are held pending collection.
13. FARE-BOXES, ILLUMINATION. A portion of the box is artificially lighted.
14. FARE-BOXES, CHANGE-GATES. Devices in the form of gates permit the passenger to secure change or tickets from the driver.
15. FARE-BOXES, COLLECTION DEVICES, SAFETY-RECEPTACLE. The receptacle can not be removed from the box without closing one or both of these parts, the contents of which are then not accessible to the carrier.
Search Class—
232—DEPOSIT AND COLLECTION RECEPTACLES, subclass 31, Letter-boxes, Collection devices, Safety-receptacles.
16. FARE-BOXES, COLLECTION DEVICES, SAFETY-RECEPTACLE, AUXILIARY. The collection device does not here receive or hold the coins in the first place, but is independent of and separable from the storage compartment of the fare-box and is used for the removal of the contents of this compartment at intervals.
Search Class—
232—DEPOSIT AND COLLECTION RECEPTACLES, subclass 32, Letter-boxes, Collection devices, Safety-receptacle, Auxiliary.

CLASS 232—Continued.

17. LETTER-BOXES. The boxes receive and hold mail-matter either awaiting collection by the carrier or which has been delivered by him.
Note.—Letter boxes and compartments such as are used in post-offices are classified in class 211, STORE FURNITURE, subclass 36, Post-office furniture.
18. LETTER-BOXES, TICKET REGISTERS AND RECORDERS. These are checks upon the time, order, or fact of collection and are obtained by registry or record.
19. LETTER-BOXES, HOUSE. Boxes which are specially adapted to house use by reason of some other feature than that of an attached signal or alarm. This other feature may be a pivoted body or other means permitting access from either side or a chute for mail delivery into the house, etc.
20. LETTER-BOXES, HOUSE, COLLECTION AND DELIVERY. Boxes specially arranged to deliver outgoing mail as well as to receive incoming mail.
Search Class—
232—DEPOSIT AND COLLECTION RECEPTACLES, subclasses 14, Change-gates, and 27, Letter-boxes, Collection and delivery.
21. LETTER-BOXES, HOUSE, COLLECTION AND DELIVERY, COMPARTMENT. The receiver for the outgoing mail is separate from the receiver or chute for the incoming mail.
22. LETTER-BOXES, HOUSE, DOOR OR WINDOW JAMB. The jambs coöperate with the boxes or fastenings therefor, so that access to the boxes can be had when the house doors or windows are open, and then only.
Search Class—
232—DEPOSIT AND COLLECTION RECEPTACLES, subclass 42, Milk-receptacles, Door or window jamb.
23. LETTER-BOXES, HOUSE, INSIDE FASTENER. The release of the doors upon the outer side of the boxes is controlled by means within the house.
24. LETTER-BOXES, COMPARTMENT. Separate compartments are provided for different classes of mail or for that intended for different persons.
Search Class—
232—DEPOSIT AND COLLECTION RECEPTACLES, subclass 21, Letter-boxes, House, Collection and delivery, Compartment.
25. LETTER-BOXES, COMPARTMENT, COÖPERATIVE CLOSURES. The same closure or coöperating closures govern the opening or openings to the several compartments.
26. LETTER-BOXES, COMPARTMENT, COÖPERATIVE CLOSURES, DISTRIBUTING-GUIDE. A single entrance or discharge-opening is used for all the compartments by relative movement of the compartments and opening or by guides connecting at will with any compartment.
27. LETTER-BOXES, COLLECTION AND DELIVERY. Boxes having provision for outgoing mail in addition to or in connection with the receptacle for the incoming mail.
Note.—Where a separate compartment is provided, the invention is classified in this class, subclass 21, Letter-boxes, House, Collection and delivery, Compartment, or subclass 24, Letter-boxes, Compartment, and subclasses thereunder.
Search Class—
232—DEPOSIT AND COLLECTION RECEPTACLES, subclass 20, Letter-boxes, House, Collection and delivery.
28. LETTER-BOXES, PIVOTED-RECEIVER. The receivers in which the mail is held form also the doors of the boxes. They are open upon the inner side, and so are accessible for removal of mail when the doors are opened.
Note.—When the entire box moves, the construction is classified in this class, subclass 40, Letter-boxes, Supports and fastenings, Movably-attached.
29. LETTER-BOXES, AUXILIARY, COÖPERATING. Boxes intended for use in connection with other letter-boxes and modified for this purpose. The usual modification consists in shaping them to conform to such other boxes in shape.
30. LETTER-BOXES, COLLECTION DEVICES. Bags or boxes in which the mail is transported from the letter-boxes to the post-offices and which coöperate with the letter-boxes. In some cases these receptacles form the receivers of the letter-boxes.
31. LETTER-BOXES, COLLECTION DEVICES, SAFETY-RECEPTACLE. The construction is such that either the receptacle or the box-bottom, or both, must be closed and locked before the receptacle can be removed from the box. Usually neither of the parts can be unlocked by the carrier except when they are together.
Search Class—
232—DEPOSIT AND COLLECTION RECEPTACLES, subclass 15, Fare-boxes, Collection devices, Safety-receptacle.

CLASS 232—Continued.

32. **LETTER-BOXES, COLLECTION DEVICES, SAFETY-RECEPTACLE AUXILIARY.** The letter-boxes themselves contain receivers in which the mail is stored pending collection and from which this mail is emptied into the auxiliary receptacles at intervals. The auxiliary receptacles usually fit a number of boxes each and are carried from one to another, each receiving the contents of a number of boxes.

Search Class—

232—DEPOSIT AND COLLECTION RECEPTACLES, subclass 16, Fare-boxes, Collection devices, Safety-receptacle, Auxiliary.

33. **LETTER-BOXES, PACKAGE CLIPS AND POCKETS.** Clips and open pockets for holding packages attached either to the inside or to the outside of the box proper or independent thereof if they do not then themselves form complete boxes.

34. **LETTER-BOXES, SIGNALS, SIGHT.** Visual signals indicating the presence of mail in the box.

35. **LETTER-BOXES, SIGNALS, SIGHT, DOOR-CONTROLLED.** The signals are moved or released by the action of the door of the box.

36. **LETTER-BOXES, SIGNALS, SOUND, DOOR-CONTROLLED.** Alarms operated by movement of the box-doors.

Search Class—

232—DEPOSIT AND COLLECTION RECEPTACLES, subclass 14, Fare-boxes, Change-gates.

37. **LETTER-BOXES, INDICATORS, DOOR-OPERATED.** Indicators moved intermittently by the action of the doors. They are usually for the purpose of showing the times of the next collections.

38. **LETTER-BOXES, FRAME CONSTRUCTION.** Inventions showing the details of frame construction and the materials used, but not special shapes, are placed here.

39. **LETTER-BOXES, SUPPORTS AND FASTENINGS.** The supports here included are such only as are particularly suited for box-support. The fastenings are means for securing the boxes to buildings, posts, or other supports.

40. **LETTER-BOXES, SUPPORTS AND FASTENINGS, MOVABLY-ATTACHED.** The supporting means permits movement of the boxes.

Note.—Where portions only of the boxes are pivoted and carry with them the mail-receivers, they are classified in this class, subclass 28, Letter-boxes, Pivoted-receiver.

Search Class—

232—DEPOSIT AND COLLECTION RECEPTACLES, subclass 14, Fare-boxes, Change-gates.

41. **MILK-RECEPTACLES.** Safeguards, generally fixed in location, which protect milk from theft after delivery or which protect a milk-receptacle from the weather.

Note.—Inventions in the receptacle itself apart from the protecting means are not here included.

42. **MILK-RECEPTACLES, DOOR OR WINDOW JAMB.** The jambs cooperate with the receptacles or fastenings therefor, so that access to the receptacles can be had when the house doors or windows are open, and then only.

Search Class—

232—DEPOSIT AND COLLECTION RECEPTACLES, subclass 22, Letter-boxes, House, Door or window jamb.

43. **MILK-RECEPTACLES, FUNNEL-FILLER.** The milk is poured in through a chute, tube, or funnel.

44. **CLOSURES AND CHUTES.** Constructions of the passages, traps, or chutes through which letters, packages, coins, or tokens pass between the point of insertion and the receiving-box. There are included also covers, flaps, and doors for the inlet and outlet openings, operating means for these or for the traps, and body construction in so far as it forms the chute or permits inspection of the same.

45. **CLOSURES AND CHUTES, LETTER-BOX.** Inventions particularly adapted to letter-box use.

Search Class—

232—DEPOSIT AND COLLECTION RECEPTACLES, subclass 36, Letter-boxes, Signals, Sound, Door-controlled.

46. **CLOSURES AND CHUTES, LETTER-BOX, NAME-PLATE.** The name-plate is so formed as to combine therewith a mail-chute. The plate usually forms the cover of the chute.

47. **CLOSURES AND CHUTES, LETTER-BOX, PIVOTED-TRAP.** A pivoted plate, pocket, or other holder receives the mail and by its movement causes or permits the passage of such mail into the body of the box. The flap or door usually cooperates with the trap to prevent unauthorized access to the contents.

CLASS 232—Continued.

Search Class—

232—DEPOSIT AND COLLECTION RECEPTACLES, subclass 57, Closures and chutes, Coin-trap, Pivoted.

48. **CLOSURES AND CHUTES, LETTER-BOX, PIVOTED-TRAP, DOUBLE.** The closing means consists of two cooperating traps, each covering a part (usually half) of the opening.

49. **CLOSURES AND CHUTES, LETTER-BOX, PIVOTED-TRAP, POCKET.** The trap incloses or partly incloses the mail-matter.

50. **CLOSURES AND CHUTES, LETTER-BOX, PIVOTED-TRAP, POCKET, BOTTOMLESS.** These pockets are themselves in the nature of chutes. The cylindrical casing within which they turn acts as a bottom or end during a portion of the movement. One end is sometimes closed; but in that case the mail is not supported by this end.

51. **CLOSURES AND CHUTES, LETTER-BOX, PIVOTED-TRAP, POCKET, INTEGRAL DOOR.** The door is rigid with the pocket.

52. **CLOSURES AND CHUTES, LETTER-BOX, PIVOTED-TRAP, TURNSTILE.** The trap is in the form of a turnstile.

Search Class—

232—DEPOSIT AND COLLECTION RECEPTACLES, subclass 61, Closures and chutes, Coin-trap, Pivoted, Rotatable, Turnstile.

53. **CLOSURES AND CHUTES, LETTER-BOX, DISCHARGE.** Constructions of the door or bottom intended to facilitate the withdrawal of mail-matter from the box.

Search Class—

232—DEPOSIT AND COLLECTION RECEPTACLES, subclass 15, Fare-boxes, Collection devices, Safety-receptacle, and subclass thereunder; also, subclass 30, Letter-boxes, Collection devices, and subclasses thereunder.

54. **CLOSURES AND CHUTES, LETTER-BOX, GUARD-FINGERS.** Points or sharp-edged strips project into the chute, guiding the mail-matter and preventing its abstraction through the chute-mouth.

Search Class—

232—DEPOSIT AND COLLECTION RECEPTACLES, subclass 63, Closures and chutes, Serrated shelves.

55. **CLOSURES AND CHUTES, COIN-TRAP.** Traps are movable rests, stops, or holders which temporarily retain coins, etc., within the chute and which by their movement discharge the coins upon another trap or into the receiver.

56. **CLOSURES AND CHUTES, COIN-TRAP, ENDLESS CARRIER.** The carrier is in the form of an endless belt.

57. **CLOSURES AND CHUTES, COIN-TRAP, PIVOTED.** The trap turns upon a pivot.

Search Class—

232—DEPOSIT AND COLLECTION RECEPTACLES, subclass 47, Closures and chutes, Letter-box, Pivoted-trap.

58. **CLOSURES AND CHUTES, COIN-TRAP, PIVOTED, COOPERATING CHUTE-CLOSURE.** The operation of the trap causes or is coincident with the closing of the chute.

59. **CLOSURES AND CHUTES, COIN-TRAP, PIVOTED, COOPERATING CHUTE-CLOSURE, MULTIPLE-TRAP.** Two or more traps form the cooperating means of closing the chute. They may act together in any predetermined order.

60. **CLOSURES AND CHUTES, COIN-TRAP, PIVOTED, ROTATABLE.** The traps move intermittently in the same direction to bring successive portions under the chute.

61. **CLOSURES AND CHUTES, COIN-TRAP, PIVOTED, ROTATABLE, TURNSTILE.** The rotatable part is in the form of a turnstile.

Search Class—

232—DEPOSIT AND COLLECTION RECEPTACLES, subclass 52, Closures and chutes, Letter-box, Pivoted-trap, Turnstile.

62. **CLOSURES AND CHUTES, GRAVITY REVERSE-CHECKS.** Removal of the contents by reversal of a receptacle is prevented by a gravity-actuated closure or by the action of a gravity-actuated lock, catch, or release.

63. **CLOSURE AND CHUTES, SERRATED SHELVES.** These extend into the chute to check withdrawal of the contents of the box. Shelves having fraud-preventive slits or other openings in the body of the shelf are included here, as well as those notched at the edges.

Search Class—

232—DEPOSIT AND COLLECTION RECEPTACLES, subclass 54, Closures and chutes, Letter-box, Guard-fingers.

CLASS 234.—RECORDERS.

DEFINITIONS.

Class.

This class includes devices for making a permanent record of the movements of machines or instruments whose movements are desired to be recorded and preserved, except organized machines in connection with whose movements a recording device may be employed, if desired, but merely as an accessory feature. In this latter case the recording device will be cross-referenced into this class. The class also includes watchmen's and workmen's time-recorders and time-stamps.

Devices connected or attached to weighing-machines for printing or impressing upon a card or paper the weight of the article weighed are classified in class 73, MEASURING INSTRUMENTS, subclass 100, Balances, Recording.

Subclasses.

1. MISCELLANEOUS. All recording devices that cannot properly be classified elsewhere.

1.5. ELECTRIC. Miscellaneous recording means electrically operated.

2. COMBINED RECORDERS AND REGISTERS. Miscellaneous apparatus wherein both a record and a registration are made.

3. COMBINED RECORDERS AND REGISTERS, FARE, INDIVIDUAL-RECORD. Apparatus combining a fare-register and a fare-recorder, a record being made of each individual fare.

4. COMBINED RECORDERS AND REGISTERS, FARE, TOTAL-RECORD. Apparatus combining a fare-register and a fare-recorder, a record being taken at the end of a trip or at any desired time of the total number of fares taken up to that time.

5. COMBINED RECORDERS AND REGISTERS, SPEED. Devices for recording the speed of a moving part and also an indicator for showing the speed at any particular time.

5.5. ELECTRIC METER. Devices for recording the movements of the various kinds of electrical measuring instruments.

6. COMBINED READINGS. Devices for recording movements of two or more different characters, as pressure and speed, etc.

7. ANEMOMETER. Devices for recording the force or the direction of the wind.

8. CARTOGRAPHIC. Devices for recording the irregularities of the surface of the ground or the bed of a river or other body of water.

9. FARE. Devices for recording the number of fares taken in a car or other conveyance.

Search Class—

234—RECORDERS, subclass 3, Combined recorders and registers, Fare, Individual-record, and subclass 4, Combined recorders and registers, Fare, Total-record.

9.5. FARE, ELECTRIC. Electrically-operated devices for recording the number of fares taken in a car or other conveyance.

10. FLOAT. Devices for recording the variations in the level of water or other liquid, the marker being connected to a float resting upon the surface of the liquid.

Search Class—

234—RECORDERS, subclass 28, Specific gravity.

11. HEAT. Devices for recording the temperature—as, for example, recording thermometers or pyrometers.

12. PASSENGER. Devices, not classifiable in other subclasses of this group, for recording the number of persons or objects whose movements are desired to be recorded.

12.5. PASSENGER, ELECTRIC. Electrically-operated devices for recording the number of persons or objects, the device being operated by the person or object itself.

13. PASSENGER, GATE. Devices for recording the number of persons passing through a gate or turnstile.

Search Class—

235—REGISTERS, subclass 93, Gate and turnstile operated.

14. PASSENGER, SEAT. Devices for recording the length of time a car or carriage seat has been occupied.

15. PASSENGER, STEP. Devices for recording the number of persons passing over a step, the step being movable and actuating the marker when depressed.

CLASS 234—Continued.

16. POWER. Devices for recording power—as, for example, recording-dynamometers.

17. PRESSURE. Pressure-recording devices not classifiable in other subclasses of this group.

18. PRESSURE, AIR-BRAKE. Devices for recording the pressure used in applying air-brakes to a train.

19. PRESSURE, GAGE, DISK. Recording-pressure gages where the record is made upon a rotating disk.

20. PRESSURE, GAGE, DRUM. Recording-pressure gages where the record is made upon a rotating drum or upon a strip of paper passing from one drum to another.

21. STEAM-ENGINE INDICATORS. The construction of the entire indicator; also, parts of the indicator not classifiable elsewhere.

22. STEAM-ENGINE INDICATORS, BOURDON TYPE. Steam-engine indicators where a Bourdon tube is employed instead of the ordinary steam-cylinder.

23. STEAM-ENGINE INDICATORS, DRUM. The construction of the reciprocating drum carrying the paper and also the connection with said drum of the operating-cord.

24. STEAM-ENGINE INDICATORS, ENGINE CONNECTIONS. Connections between the steam-engine or any of its parts and the indicator whereby the latter is operated or is secured in place.

25. STEAM-ENGINE INDICATORS, INDICATOR-CYLINDER. The construction of the indicator-cylinder, including also any pencil holding or operating devices.

26. SHIP'S COURSE. Devices for making a continuous record of the course of a moving ship, such as recording-compasses, etc.

26.5. SHIP'S COURSE, ELECTRIC. Electrically-operated devices for making a continuous record of the course of a moving ship.

27. SIGNAL. Devices for recording the time or duration of steam-whistles or other signals.

27.5. SIGNAL, ELECTRIC. Electrically-operated devices for recording the operation of the various kinds of signals.

28. SPECIFIC GRAVITY. Devices for recording the varying specific gravity of a liquid, as determined by a hydrometer or other instrument.

29. SPEED. Devices for recording the speed of any moving object except rotating shafts.

29.5. SPEED, ELECTRIC. Electrically-operated speed-recorders.

30. SPEED, SHAFT, CONTINUOUS-RECORD. Devices, not classifiable in subclass 31, Speed, Shaft, Continuous-record, Governor-controlled, and subclass 32, Speed, Shaft, Continuous-record, Uniform-amplitude, for making a continuous unbroken record of the speed of a rotating shaft.

31. SPEED, SHAFT, CONTINUOUS-RECORD, GOVERNOR-CONTROLLED. Devices controlled by a governor for making a continuous unbroken record of the speed of a rotating shaft.

32. SPEED, SHAFT, CONTINUOUS-RECORD, UNIFORM-AMPLITUDE. Devices for making a continuous unbroken record of the speed of a moving shaft, the marker being moved back and forth always the same distance.

33. SPEED, SHAFT, INTERMITTENT-RECORD. Devices for recording the speed of a rotating shaft, the record comprising a series of marks or punctures.

33.5. TELEPHONE. Electrically-operated devices for recording the time of service or other facts connected with the operation of a telephone system.

Note.—For indicating (not recording) devices analogous to the above see class 161, TIME-CONTROLLING MECHANISM, subclass 19, Timing mechanism, Telephone-service.

34. VOLUME. Devices for continuously recording the volume of water or other fluid passing through a certain space.

34.5. VOLUME, ELECTRIC. Electrically-operated devices for recording the volume of water or other fluid passing through a certain space.

35. VOLUME, METER-READING. Devices whereby the reading of a gas or other meter may be transferred to a card.

CLASS 234—Continued.

36. **TIME.** Devices for recording the time of two or more successive movements of an object past the same point; also, devices for recording the absolute time at which a certain operation takes place; also, devices, such as chronographs, for recording very small intervals of time.
- 36.5. **TIME, ELECTRIC.** Electrically-operated devices analogous to those in subclass 36, Time, this class.
37. **TIME, WATCHMEN'S, MISCELLANEOUS.** Watchmen's time recorders not classified elsewhere.
Note.—Devices for indicating but not recording time, when a watchman has signaled from his station are found in class 161, TIME-CONTROLLING MECHANISM, subclass 20, Timing-mechanism, Watchmen's.
- 37.5. **TIME, WATCHMEN'S, ELECTRIC.** Electrically-operated watchmen's time-recorders, except those classified in subclass 37.6, Time, Watchmen's, Electric, Receivers, this class.
- 37.6. **TIME, WATCHMEN'S, ELECTRIC, RECEIVERS.** Electrically-operated watchmen's time-recorders where the invention resides only in the part of the system where the record is made.
38. **TIME, WATCHMEN'S, STATIONARY-RECORD, TIME-OPERATED MARKER.** Recorders having a stationary record-surface, usually graduated in divisions of time, over the surface of which passes a time-operated marker which is forced into contact with the record-surface by the watchman as he makes his round.
39. **TIME, WATCHMEN'S, TIME-OPERATED RECORD, MULTIPLE-KEY.** Recorders carried by the watchman on his round, each recorder comprising a time-operated record-surface and a marking device which is forced into contact with the record-surface by a key secured at the station, each station having its individual key.
40. **TIME, WATCHMEN'S, TIME-OPERATED RECORD, SINGLE-KEY.** Watchmen's time-recorders located at the several stations, each recorder comprising a time-operated record-surface upon which a mark or impression is made either through an aperture in the casing by a marker connected to the recorder or carried by the watchman or by means of a marker permanently affixed to the recorder and operated by means of a cord, lever, or key.
41. **TIME, WORKMEN'S, MISCELLANEOUS.** Workmen's time-recorders not classified elsewhere.
Note.—Devices for indicating but not recording times when a workman arrives, or the time when work is done, are found in class 161, TIME-CONTROLLING MECHANISM, subclass 21, Timing mechanism, Workman's.
- 41.5. **TIME, WORKMEN'S, ELECTRIC.** Electrically-operated workmen's time-recorders.
42. **TIME, WORKMEN'S, CHECK-RECEIVERS.** Machines having a number of compartments corresponding to divisions of time and in which a check deposited by the workman is automatically directed to the proper compartment.
43. **TIME, WORKMEN'S, INDIVIDUAL-CARD, TIME-IMPRESSION.** Machines for printing upon workmen's identification-cards inserted therein, the time of their insertion.
Search Class—
 234—RECORDERS, subclasses 54, Time-stamps, Dial, Movable-dial; 55, Time-stamps, Dial, Movable-platen; 56, Time-stamps, Drum, Movable-drum; 57, Time-stamps, Drum, Movable-platen.
44. **TIME, WORKMEN'S, INTERMITTENTLY-MOVABLE RECORD, TIME-PRINTING WHEEL, AUTOGRAPHIC.** Machines having a strip of paper upon which the workman writes his name, after which he operates a lever or moves some part of the machine which causes the time to be printed in line with the name and also moves the paper for the next workman.
Search Class—
 234—RECORDERS, subclass 49, Time, Workmen's, Time-operated record, Autographic.
45. **TIME, WORKMEN'S, INTERMITTENTLY-MOVABLE RECORD, TIME-PRINTING WHEEL, CHECK-OPERATED.** Machines where a check bearing the workman's designation is dropped into a chute, the check falling to a position in line with time-printing wheels and in its passage causing the operation of a printing-platen which imprints the workman's number and time upon a strip of paper which during the operation is moved to expose a fresh surface on the printing-line.

CLASS 234—Continued.

46. **TIME, WORKMEN'S INTERMITTENTLY-MOVABLE RECORD, TIME-PRINTING WHEEL, INDIVIDUAL-RECORD, SINGLE-IMPRESSION.** Machines where a record is made by a set of time-printing wheels upon a record-sheet, there being a single operating-lever which by its operation first causes the record-sheet to move to place into printing position that portion corresponding to the workman's number and then causes the engagement of the printing-wheels therewith.
47. **TIME, WORKMEN'S, INTERMITTENTLY-MOVABLE RECORD, TIME-PRINTING WHEEL, PRINTING-KEY.** Machines wherein the workman inserts and turns a key bearing his individual designation, which key coöperates with time-printing wheels and in its operation causes the movement of a printing platen and also advances the record-strip.
48. **TIME, WORKMEN'S, INTERMITTENTLY-MOVABLE RECORD, TIME-PRINTING WHEEL, PRINTING-KEY, OPERATING-LEVER.** Machines similar to those in subclass 47 in this class, except that instead of turning the key the key is inserted and a separate lever operated to cause the movements of the parts.
49. **TIME, WORKMEN'S, TIME-OPERATED RECORD, AUTOGRAPHIC.** Devices having a record-sheet moved by a time-train, the sheet having the time printed on its margin, either in and by the machine or before being placed therein, the workman writing his name upon an exposed portion of the paper.
Search Class—
 234—RECORDERS, subclass 44, Time, Workmen's, Intermittently-movable record, Time-printing wheel, Autographic.
50. **TIME, WORKMEN'S, TIME-OPERATED RECORD, INDIVIDUAL-RECORD, SINGLE-IMPRESSION.** Machines having a time-operated record-sheet with a separate place for the record of each workman, there being but a single key for all the workmen.
51. **TIME, WORKMEN'S, TIME-OPERATED RECORD, INDIVIDUAL-RECORD, SINGLE IMPRESSION, PRINTING-KEY.** Machines having a time-operated record-sheet with a separate place thereon for each workman's designation, each workman having an individual key.
52. **TIME, WORKMEN'S, TIME-OPERATED RECORD, INDIVIDUAL-RECORD, TAG-OPERATED MARKER.** Machines where an individual record is made, either by a continuous mark while the workman is employed or by single marks made at the beginning and end of work, the marker being operated by means of a tag hung on a hook or other part of the machine.
53. **TIME, WORKMEN'S, WAGE-COMPUTERS.** Devices for making a continuous record during the time the workman is employed, the recording-surface being graduated to indicate time employed or amount of wages due for such time, or both, so that the record will show at any time the amount due the workman.
Search Class—
 234—RECORDERS, subclass 52, Time, Workmen's, Time-operated record, Individual-record, Tag-operated marker.
- 53.5. **TIME-STAMPS, ELECTRIC.** Electrically-operated time-stamps.
54. **TIME-STAMPS, DIAL, MOVABLE-DIAL.** Time-stamps having the time indications on the face of dials or disks and in which when operated the dials are forced against a stationary platen.
55. **TIME-STAMPS, DIAL, MOVABLE-PLATEN.** Time-stamps having the time indications on the face of dials or disks and in which when operated the platen is forced against the dials.
56. **TIME-STAMP, DRUM, MOVABLE-DRUM.** Time-stamps having the time indications on the periphery of drums or wheels and in which when operated the drums are forced against a stationary platen.
57. **TIME-STAMPS, DRUM, MOVABLE-PLATEN.** Time-stamps having the time indications on the periphery of drums or wheels and in which when operated the platen is forced against the drums.

CLASS 235.—REGISTERS.**DEFINITIONS.***Class.*

This class includes machines employed for ascertaining the number of movements of various devices or machines; also, indicating devices where the purpose is to disclose the extent or quantity of movement of the indicator and where the device is separate and independent of the machine whose movements are to be noted; also, organized machines (cash-registers, fare-registers, voting-machines, and calculators) having registering or counting devices as essential or important elements and having in addition certain other features necessary to make up the complete machines for the purposes desired. In this class are also some recording devices—recording cash-registers, recording-calculators, and recording voting-machines—which are classified herein instead of in class 234, RECORDERS, by reason of the analogy of the machines as entireties to other machines (cash-registers, etc.), in this class and their dissimilarity to other recording devices. These recording devices usually, but not invariably, comprise attachments for printing numbers.

Registers *per se* include attachments to machines where the purpose is to ascertain or count the number of movements thereof, such as engine-counters, counters for printing-presses, etc. They also include devices comprising indicating hands or pointers (or equivalents thereof), whether moved regularly or irregularly, forward or backward, in cooperation with a scale or index to disclose the extent of movement.

In addition to registers *per se*, the class is subdivided into various groups according to the functions of the machines classified therein.

Note.—The registering mechanisms employed in cash-registers (except those in subclass 13) and calculators are capable of being operated to different extents—that is, if they comprise drums having numerals from “0” to “9” on their peripheries they may be operated one step or more up to the limit at one operation, dependent upon the key or equivalent actuated. Moreover, any drum or drums (or equivalent) in the set representing different orders, as units, tens, etc., or dollars and cents, may be operated either singly or together. In these respects the registers are different in their operation from those in the other groups, where the actuator is in operative relation only with the wheel or other device of lowest order and moves the same one step at a time, the tens being “carried” as this or any other wheel completes its rotation.

Subclasses.

1. MISCELLANEOUS. Registering devices not elsewhere classifiable.

CASH-REGISTERS. In this group are classified machines employed in mercantile establishments for the purpose of keeping a check upon the financial transactions. These machines usually comprise keys or equivalents, registering devices, indicating-tablets, or drums to disclose to the purchaser the amount of the sale, a cash-drawer, a bell or other alarm, and various subordinate devices mainly for the purpose of compelling the clerk or cashier to completely and correctly operate the machine. It also includes machines where an autographic record of the transaction is made upon a movable strip of paper, together with means for moving the paper, a cash-drawer, and other subsidiary devices.

Note.—Machines in which an autographic record of the transaction is made upon movable strips of paper, either singly or in duplicate, one or more of the strips being rolled up in the machine, and comprising nothing more than the strips of paper, together with the means for moving the same and rolling or otherwise disposing of them within the machine, are not classified herein.

2. CASH REGISTERS AND RECORDERS. Cash-registers embodying both a register and a recording attachment or an attachment for printing the amount of the sale registered.

Search Class—

235—REGISTERS, subclasses 58, Calculators, Recording; 59, Calculators, Recording, Key-Operated; 60, Calculators, Recording, Key-Set.

3. CASH REGISTERS AND RECORDERS, CHECK-PRINTING. Cash-registers of the type classified in subclass 2 and having in addition an attachment for feeding, printing, and delivering from the machine a check showing the amount of the sale, together with additional data, if desired, such as the date of the transaction, etc.

4. CASH-RECORDERS. Machines constructed like cash-registers, but having the register replaced by a recording device for preserving a record of the sales.

5. CASH-RECORDERS, MANUAL. Cash-recorders containing a movable strip of paper on which a memorandum of the transaction is manually made, together with devices ordinarily found in cash-registers for moving the paper and also, if desired, other features characteristic of cash-recorders.

6. CASH-REGISTERS, DEPARTMENTAL. Cash-registers including two or more separate and distinct attachments for registering the sales of different clerks or departments, a single set of cash-keys, and separate keys or other devices whereby the cash-keys may be placed in operative connection with any desired registering attachment.

CLASS 235—Continued.**Search Class—**

235—REGISTERS, subclass 29, Fare-registers, Multiple.

7. CASH-REGISTERS. Cash-registers not elsewhere classifiable.

8. CASH-REGISTERS, KEY-SET. Cash-registers not elsewhere classified where the keys are employed merely for setting certain parts into operative position, which parts by a subsequent movement of another part of the machine are so actuated as to cause the operation of the machine.

9. CASH - REGISTERS, KEY - SET, CRANK - OPERATED. Key-set cash-registers operated by the rotation of a crank or the movement of a lever.

Search Class—

235—REGISTERS, subclass 21, Cash-registers, Dial, Lever-operated.

10. CASH-REGISTERS, KEY-SET, DRAWER-OPERATED. Key-set cash-registers operated by the movement of the drawer.

Search Class—

235—REGISTERS, subclass 22, Cash-Registers, Drawer-operating mechanism.

11. CASH - REGISTERS, KEY - SET, MOTOR - OPERATED. Key-set cash-registers wherein the movement of the key releases a spring or other motor which actuates the machine.

Search Class—

235—REGISTERS, subclass 62, Calculators, Motor-actuated.

12. CASH-REGISTERS, KEY-OPERATED. Cash-registers not otherwise classified in which the pressing of the key causes the operation of the various parts of the cash-register, as the indicators, registers, drawer-opening devices, etc.

13. CASH - REGISTERS, KEY - OPERATED, DETAIL-ADDERS. Key-operated cash-registers wherein a separate and independent register is connected to each key.

14. CASH-REGISTERS, KEY-OPERATED, DIFFERENTIAL MECHANISM. Key-operated cash-registers wherein several keys act upon the same set of register-wheels, the wheels being actuated a different distance according to the value of the key operated.

15. CASH - REGISTERS, KEY-OPERATED, DIFFERENTIAL MECHANISM, KEY-COUPLED. Key-operated cash-registers having differential mechanism where a key-lever when actuated is connected with a coupling or “universal” bar, so that when several keys are thus coupled further pressure upon any one of such keys will cause the operation of the machine.

16. CASH-REGISTERS, KEY-OPERATED, DIFFERENTIAL MECHANISM, LOST-MOTION MECHANISM. Key-operated cash-registers having differential mechanism wherein the key-levers move a certain distance, depending upon the value of the key, before causing any movement of the parts to be actuated.

17. CASH - REGISTERS, CHECKS. Cash - registers wherein checks or disks or the like are employed for the purpose of registering the sales.

18. CASH-REGISTERS, CHECKS, BALLS. Cash-registers employing a number of balls to register the sales, the balls sometimes being superposed in a transparent tube, the tube or the casing bearing graduations, so that the number corresponding to a column of any height may be ascertained from inspection, or the balls may be employed in various other ways.

Search Class—

235—REGISTERS, subclasses 68, Calculators, Ball, and 123, Ball or button indicator.

19. CASH-REGISTERS, DIAL. Cash-registers without keys, but having a pointer movable over a dial, the pointer being moved by hand and in or by its movement causing the operation of the various parts of the machine. In this subclass the pointer traveling over the face of the dial serves as the indicator.

20. CASH-REGISTERS, DIAL, INDEPENDENT-INDICATOR. Machines similar to those of subclass 19, Cash-Registers, Dial, with the addition of a separate indicator.

21. CASH-REGISTERS, DIAL, LEVER-OPERATED. Cash-registers wherein a pointer or the like connected to a lever or its equivalent is moved over a graduated scale, the extent of movement determining the operation of the machine by the lever.

22. CASH-REGISTERS, DRAWER-OPERATING MECHANISM. Mechanism whereby the drawer of a cash register is opened or by which it is released so that it may be thrown open by means of a spring normally pressing against it; also, any mechanism whereby the drawer is operated in any way.

CLASS 235—Continued.

23. CASH-REGISTERS, INDICATOR MECHANISM. Mechanism for operating or for causing to be operated the indicators of a cash-register, except the independent devices for dropping the tablets, for which see subclasses 25, Cash-registers, Indicator mechanism, Tablet-droppers.
 24. CASH-REGISTERS, INDICATOR MECHANISM, SHUTTERS. Shutters or screens and operating devices therefor, whereby the figures on the indicators are obscured during part of the operation of the machine.
 25. CASH-REGISTERS, INDICATOR MECHANISM, TABLET-DROPPERS. Devices for causing the dropping of the tablets of a cash-register after they have been displayed.
 26. CASH-REGISTERS, KEY-ARRESTERS. Devices for preventing the simultaneous operation of two or more keys or for preventing the operation of more than a predetermined number of keys.
 27. CASH-REGISTERS, KEY-LOCKS. Devices for locking the keys of a cash-register against movement—as, for example, when the proprietor leaves the machine for a time and does not wish it operated during his absence.
 28. CASH-REGISTERS, LID-REGISTERS. Registers that count or indicate the number of times the lid or cover of a cash-register has been opened.
- FARE-REGISTERS. Machines employed in street-cars, operated by the conductor when taking fares and serving to indicate and register the number of fares taken. These machines include an operating-lever or its equivalent actuated by cords or rods accessible from any point of the car, registers, trip or total, or both, alarm devices, and various auxiliary devices, mainly for the purpose of preventing the conductor "beating" the machine.
29. FARE-REGISTERS, MULTIPLE. Fare-registers including two or more separate registers for indicating different classes of fare, whether such registers are entirely independent of each other or whether they have either a common trip-register or a common totalizer.
 30. FARE-REGISTERS, CAB-FARE-INDICATING. Devices attached to a cab or other vehicle, adapted to be actuated by a time-train or according to the distance traveled, at the option of the passenger, the connection being made by the driver, said device indicating to the passenger the time or distance and the amount of fare he is to pay for such time or distance.
 31. FARE-REGISTERS, TICKET-DELIVERY. Structures containing a roll of tickets, one of which, either punched or not, is withdrawn and given to each passenger and at the same time is counted upon a register.
 32. FARE-REGISTERS, REGISTERING-BOXES. Fare-boxes for street-cars, etc., containing a register operated by the fare or the ticket or during the operation of the box to cause the fare to be dropped from one part to another.
- Search Class—**
235—REGISTERS, subclass 100, Registering-boxes.
33. FARE-REGISTERS. Fare-registers not elsewhere classified.
 34. FARE-REGISTERS, DIAL-AND-CYLINDER. Fare-registers whose trip-register is a pointer moving around a graduated dial and whose totalizer is composed of a series of cylinders placed side by side.
 35. FARE-REGISTERS, BELT. Fare-registers whose registering devices are belts or short flat links forming endless chains, upon which the numbers are placed.
 36. FARE-REGISTERS, PARALLEL-AXES. Fare-registers, not elsewhere classified, having a plurality of registers located on axes parallel with each other.
 37. FARE-REGISTERS, PARALLEL-AXES, CYLINDER. Fare-registers having two sets of registering devices, as for trip and total, each set composed of a number of cylinders placed side by side.
 38. FARE-REGISTERS, PARALLEL-AXES, DIAL-AND-HAND. Fare-registers whose registering devices, whether in one set only or in two sets—trip and total—are composed of a number of pointers, each moving around a graduated dial, the pointers of each set in the higher orders being actuated one graduation when the pointer of the lower order has made a complete rotation.
 39. FARE-REGISTERS, PARALLEL-AXES, DISK. Fare-registers including one or more sets of registering devices, each set composed of disks numbered upon their faces, the numbers showing successively through an aperture in the casing as the disks are rotated, the disks of lower orders transferring to those of higher orders as they make complete rotations.
 40. FARE-REGISTERS, SINGLE-AXIS. Fare-registers, not elsewhere classified, having one or more registers arranged on a single axis.
- Search Class—**
235—REGISTERS, subclass 34, Fare-registers, Dial-and-cylinder.

CLASS 235—Continued.

41. FARE-REGISTERS, SINGLE-AXIS, CONCENTRIC-DISK. Fare-registers whose registering devices comprise a plurality of disks numbered on their faces and placed concentrically upon a single shaft or axis.
- Search Class—**
235—REGISTERS, subclasses 78, Calculators, Single-axis, Concentric-disk; 116, Single axis, Concentric-disk.
42. FARE-REGISTERS, SINGLE-AXIS, CYLINDER. Fare-registers whose registering devices are composed of a series of drums placed side by side upon a single shaft. In some cases these drums are arranged in two sets, a trip and total, the sets being separated from each other.
- Search Class—**
235—REGISTERS, subclasses 34, Fare-registers, Dial-and-cylinder, and 37, Fare-registers, Parallel-axes, Cylinder.
43. FARE-REGISTERS, SINGLE-AXIS, DIAL-AND-HAND. Fare-registers wherein the registering attachment comprises one or more hands moving over a dial and arranged around the same axis in a manner similar to the hour and minute hands of a clock, but ordinarily actuated step by step.
 44. FARE-REGISTERS, OPERATING DEVICES. Devices, aside from the internal mechanism of a fare-register, for operating the same.
 45. FARE-REGISTERS, OPERATING DEVICES, ELECTRIC. Operating devices for fare-registers composed partly of electrical circuits, cut-offs, etc.
 46. FARE-REGISTERS, OPERATING DEVICES, PUNCH. Registering ticket-punches and the like.
 47. FARE-REGISTERS, RESETTING. Devices by which the trip-register of a fare-register is set back to zero at the beginning of a trip.
- Note.**—This subclass, while similar to subclass 144, Zero-setting devices, in one respect (restoring the register-wheels to zero) differs from it in that while such restoration is going on various other operations are or may be performed—such as locking the machine against movement, setting the trip or direction indicator, moving a zero-register, etc.
48. FARE-REGISTERS, RESETTING, DIRECTION-INDICATOR. Devices in a fare-register for indicating the direction the car is moving and mechanism for actuating the same.
 49. FARE-REGISTERS, HUNDREDS-INDICATOR. Additions to the trip-register of a fare-register by which its capacity is increased.
- VOTING-MACHINES. Machines employed for mechanically casting and counting votes. These machines usually comprise keys or equivalents, one for each candidate, and in most cases a key whereby by a single movement a vote can be given for the entire set of candidates of either party, interlocking mechanism for preventing votes being given for more than the proper number of candidates, and various auxiliary devices.
50. VOTING-MACHINES, RECORDING. Voting-machines having a device for recording upon a strip of paper or its equivalent the number of votes cast. The machine may or may not also have a registering attachment.
 51. VOTING-MACHINES. Voting-machines not elsewhere classified.
 52. VOTING-MACHINES, ASSEMBLY. Devices by means of which legislators or members of assemblies can, by operating keys or levers, indicate a "yes" and "no" vote, these devices frequently having registers connected therewith for counting up the totals of such votes. In many cases these devices are connected with the desks of the legislators.
 53. VOTING-MACHINES, CHECK-OPERATED. Voting machines wherein a check or ball is employed to operate the registering device.
 54. VOTING-MACHINES, KEY-SET. Voting-machines wherein the movement of the key sets in position for further operation certain parts, the operation of such parts and through them the registers, etc., being effected by means of a device afterward operated, such as the opening of the door of the booth by the voter when he departs, etc.
 55. VOTING-MACHINES, KEY-OPERATED. Voting-machines wherein the registering is effected by the direct action of the keys or levers.
 56. VOTING-MACHINES, VOTE-COUNTERS. Devices of various kinds whereby the votes as marked upon "Australian ballots" are enabled to be rapidly counted.
 57. REGISTERING BALLOT-BOXES. Ballot-boxes having attachments for registering the number of ballots placed therein.
- CALCULATORS. In this group are classified machines for mechanically performing the various mathematical operations, usually those of addition or subtraction, frequently that of multiplication, and occasionally of division. These machines generally comprise registers and keys or equivalents for operating them, together with necessary auxiliary devices.

CLASS 235—Continued.

58. **CALCULATORS, RECORDING.** Calculators not classified in other subclasses which contain adding or other calculating mechanism and devices for printing the numbers set up or the results, or both.

59. **CALCULATORS, RECORDING, KEY-OPERATED.** Key-operated recording calculating-machines where the actuation of the key directly operates the registering and printing devices.

60. **CALCULATORS, RECORDING, KEY-SET.** Recording calculating-machines where the depression of a key sets certain devices in position and a succeeding movement of another part, as a handle or lever, operates the machine.

61. **CALCULATORS.** Calculating-machines not elsewhere classified.

62. **CALCULATORS, MOTOR-ACTUATED.** Calculating-machines wherein the pressing of a key releases a spring or other motor which actuates the devices to the extent determined by the value of the key operated.

Search Class—

235—REGISTERS, subclass 11, Cash-registers, Key-set, Motor-operated.

63. **CALCULATORS, TRAVELING-CARRIAGE.** Calculating-machines having a single set of keys and having devices movable from order to order of the registering mechanism and connecting the keys successively therewith.

64. **CALCULATORS, ADDING-PENCILS.** Devices attached to a pencil or similar instrument which are employed to keep account of the sum of columns to be added or the number of tens to be "carried," usually operated by the pressure of the point upon the paper or disk.

Note.—Adding devices that are merely adapted to be clamped to a pencil, but do not form part thereof nor are operated by the movement of the pencil, are not classified herein, but are classified according to the structure of the adding device itself.

65. **CALCULATORS, BAR-AND-DISK.** Adding-machines comprising two parts, a bar and a disk, one part being for the lower orders and the other for the higher.

66. **CALCULATORS, CYLINDER-AND-DISK.** Adding-machines comprising two parts, a cylinder and a disk, or a plurality of either.

67. **CALCULATORS, SPIRAL.** Adding-machines wherein the numbers are arranged spirally, either around the surface of a cylinder or upon the face of a disk, there ordinarily being a pointer or its equivalent that travels in cooperation with the cylinder or disk in order to indicate the proper figure or number.

Search Class—

235—REGISTERS, subclass 107, Spiral.

68. **CALCULATORS, BALL.** Calculators wherein the registering devices are composed of balls.

Search Class—

235—REGISTERS, subclasses 123, Ball or button indicator, and 18, Cash-registers, Checks, Balls.

69. **CALCULATORS, BAR.** Calculating devices wherein a bar or bars bearing numerals are employed instead of disks or cylinders.

70. **CALCULATORS, BAR, SLIDE-RULES.** Rules consisting of a stationary base, and one or more slides movable therein, both the base and the slides being graduated, usually logarithmically, according to the different elements of some mathematical formula, so that by placing the slide in proper relation to the base, problems embodying such formula may be solved without calculation.

Search Class—

235—REGISTERS, subclass 84, Calculators, Single-axis, Disk, Slide-rules.

71. **CALCULATORS, BELT.** Adding-machines wherein movable belts bearing numerals are employed instead of cylinders or disks.

Note.—Machines wherein belts are employed as devices whereby to operate registering or calculating cylinders, etc., are not classified herein, but are located according to the character of the registering mechanism.

72. **CALCULATORS, PARALLEL-AXES.** Calculating-machines, not elsewhere classified, wherein the registering-disks or their equivalents are placed upon axes parallel with each other.

Search Class—

235—REGISTERS, subclass 76, Calculators, Parallel-Axes, Gear.

73. **CALCULATORS, PARALLEL-AXES, CYLINDER.** Calculating-machines whose registering attachments comprise cylinders placed either singly or in sets on axes parallel with each other.

74. **CALCULATORS, PARALLEL-AXES, DISK.** Calculating-machines whose registering attachments comprise disks placed upon axes parallel with each other, the disks being actuated by some instrument held in the hand, such as a stylus, pencil, etc.

CLASS 235—Continued.

75. **CALCULATORS, PARALLEL-AXES, DISK, KEY-OPERATED.** Calculating-machines whose registering attachments comprise disks placed upon axes parallel with each other, the machines being operated by means of keys.

76. **CALCULATORS, PARALLEL-AXES, GEAR.** Calculating-machines whose registering devices are on axes parallel with each other, these devices being connected by gears instead of by intermittent transfer mechanism.

77. **CALCULATORS, SINGLE-AXIS.** Calculators, not elsewhere classified, whose registering devices are placed upon the same axis.

78. **CALCULATORS, SINGLE-AXIS, CONCENTRIC-DISK.** Calculating-machines whose registering devices comprise a plurality of disks numbered on their faces and placed concentrically on a single shaft or axis.

Search Class—

235—REGISTERS, subclasses 41, Fare-Registers, Single-Axis, Concentric-Disk, and 116, Single Axis, Concentric-Disk.

79. **CALCULATORS, SINGLE-AXIS, CYLINDER.** Calculating-machines, not elsewhere classified, whose registering devices are composed of a number of cylinders placed side by side on a common shaft.

80. **CALCULATORS, SINGLE-AXIS, CYLINDER, KEYLESS.** Calculators whose registering devices comprise cylinders placed upon a single axis, these cylinders being operated directly by means of the fingers of the operator or by a stylus, pencil, or other instrument held in the hand.

81. **CALCULATORS, SINGLE-AXIS, CYLINDER, KEYLESS, LEVER-OPERATED.** Calculators whose registering devices comprise cylinders placed side by side upon a single axis, these cylinders being operated by levers or equivalents having handles or the like movable to different extents over a graduated plate.

82. **CALCULATORS, SINGLE-AXIS, CYLINDER, KEY-OPERATED.** Calculating-machines having registering devices composed of a series of cylinders placed side by side upon a common shaft and being directly operated by the depression of keys, with which the machine is provided.

83. **CALCULATORS, SINGLE-AXIS, DISK.** Calculators whose registering devices comprise a disk or two disks upon the same axis, one movable with respect to the other or one or more hands or pointers movable over the face of a dial properly graduated.

84. **CALCULATORS, SINGLE-AXIS, DISK, SLIDE-RULES.** Devices similar to those in subclass 70, Calculators, Bar, Slide-Rules, except that the base and the slides instead of being straight are circular.

Search Class—

235—REGISTERS, subclass 70, Calculators, Bar, Slide-Rules.

85. **CALCULATORS, TABULAR.** Structures, not elsewhere classified, where a table showing results calculated from certain data is so arranged that by properly manipulating the same any desired result is exposed to view at a sight-opening.

86. **CALCULATORS, TABULAR, BELT.** Tabular calculators having their tables placed upon belts which are movable back and forth, as desired.

87. **CALCULATORS, TABULAR, CYLINDER.** Tabular calculators having tables formed or placed upon cylinders.

88. **CALCULATORS, TABULAR, DISK.** Tabular calculators having tables placed upon disks which rotate about their centers.

89. **CALCULATORS, TABULAR, SHEET.** Tabular calculators having tables placed upon sheets, the sheets being attached to a frame either permanently or temporarily and a guiding-strip or the like being provided to be used in connection with the sheets.

90. **GAME-BOARDS.** Boards, such as cribbage-boards and the like, whereon the scores made in a game may be counted, the counting being accomplished by means of pegs or the like successively moved to different holes as the score increases.

91. **OPERATING DEVICES.** Devices, not elsewhere classified, for operating registers, the specific construction of the registers not being of the invention.

92. **ELECTRICALLY OPERATED.** Devices in which the register is operated through the medium of electrical devices.

93. **GATE AND TURNSTILE OPERATED.** Registers connected with and operated by a turnstile.

94. **LIQUID-REGISTERS.** Registers operated by means of a faucet or other part through or in which the fluid passes, such as registering-faucets, registers connected with saucers holding beer-glasses, registering-bottles, etc.

95. **ODOMETERS.** Registers connected or attached to the wheel or axle of a vehicle, such as a carriage or bicycle, for the purpose of counting the number of revolutions made by the wheel and, with the knowledge of the size of the wheel, of measuring the distance traveled, the counting-wheels being marked to indicate the distances instead of the number of revolutions.

CLASS 235—Continued.

96. **ODOMETERS, DETAILS.** Details or isolated parts of odometers or parts connected therewith, such as tappets, brackets, etc.
97. **ODOMETERS, TRIP-AND-TOTAL.** Odometers having two sets of registering devices, one set moving continuously to indicate the entire distance traveled and the other set capable of being reset to zero at any desired time and adapted to indicate the distance traveled during a single trip or in a day or any desired interval of time.
98. **PACKAGE-OPERATED.** Registers operated by a package, barrel, etc., passing through the machine.
99. **PLATFORM-OPERATED.** Registers operated through the medium of a depressible seat, platform, or the like on which the person sits or steps or the article is placed.
100. **REGISTERING-BOXES.** Registers operated by a coin as it passes into a box or other receptacle.
Search Class—
 235—REGISTERS, subclass 32, Fare-Registers, Registering-Boxes.
101. **STAMP.** Registers operated by a hand-stamp.
102. **TYPE-WRITER WORD-COUNTERS.** Devices for counting the number of words, etc., written by a type-writer.
103. **ROTATION-COUNTERS.** Instruments for counting the number of rotations made by a shaft or other piece of machinery.
104. **ROTATION-COUNTERS, TIMING DEVICES.** Instruments or machines for counting or indicating the number of rotations in a given time made by a shaft or other piece of machinery—as, for example, the number of rotations per second or minute or even the number of miles per hour made by a moving vehicle.
105. **PEDOMETERS.** Instruments attached to the foot or body for counting the number of steps made; also, devices for analogous purposes.
106. **ANGLED-AXES.** Machines having several registering devices placed on axes at angles to each other.
107. **SPIRAL.** Registers wherein the numbers are arranged spirally, either around the surface of a cylinder or upon the face of a disk, a pointer being sometimes employed which travels along the cylinder or disk in order to indicate the proper numeral.
Search Class—
 235—REGISTERS, subclass 67, Calculators, Spiral.
108. **PARALLEL-AXES.** Registers, not elsewhere classified, whose counting devices are placed on axes parallel with each other.
109. **PARALLEL-AXES, GEAR.** Registers whose counting devices are placed upon axes parallel with each other and which are connected by gearing instead of intermittently-operating transfer mechanism.
110. **PARALLEL-AXES, CYLINDER.** Registers whose counting devices comprise several cylinders or drums placed upon axes parallel with each other.
111. **PARALLEL-AXES, DIAL-AND-DISK.** Registers whose counting devices include both graduated movable disks and pointers passing over graduated dials, the devices being placed upon axes parallel with each other.
112. **PARALLEL-AXES, DIAL-AND-HAND.** Registers whose counting devices include several graduated dials over whose surfaces pass pointers or hands, the devices being placed upon axes parallel with each other.
Search Class—
 235—REGISTERS, subclass 109, Parallel-Axes, Gear.
113. **PARALLEL-AXES, DISK.** Registers whose counting devices include a plurality of rotatable disks having numbers on their faces and placed upon axes parallel with each other.
Search Class—
 235—REGISTERS, subclass 111, Parallel-Axes, Dial-and-Disk.
114. **PARALLEL-AXES, DISK, HAND-OPERATED.** Registers having counting devices similar to those defined in subclass 113, Parallel-Axes, Disk, the disks being separately operated by hand. These registers are generally used in keeping count of the points made in games.
115. **SINGLE-AXIS.** Registers, not elsewhere classified, whose counting devices are placed upon a single axis.
116. **SINGLE-AXIS, CONCENTRIC-DISK.** Registers whose counting devices comprise a plurality of disks numbered upon their faces and placed concentrically upon a single shaft or axis.
Search Class—
 235—REGISTERS, subclasses 41, Fare-Registers, Single-Axis, Concentric-Disk, and 73, Calculators, Single-Axis, Concentric-Disk.
117. **SINGLE-AXIS, CYLINDER.** Registers whose counting devices comprise a plurality of cylinders placed side by side upon a single shaft or axis.

CLASS 235—Continued.

118. **SINGLE-AXIS, CYLINDER, SINGLE-CYLINDER.** Registers whose counting devices comprise a single cylinder numbered on its periphery.
119. **SINGLE-AXIS, DIFFERENTIAL GEARS.** Registers whose counting devices comprise two or more cylinders placed upon a single axis, the cylinders having connected or formed therewith gears having different numbers of teeth, but actuated by the same gear, thus causing a slow movement of one cylinder with respect to the other.
120. **SINGLE-AXIS, DIAL AND HAND, MULTIPLE-HAND.** Registers whose counting devices comprise several pointers or hands moving over a dial and turning around the same axis at different rates of speed, the relative movements being continuous, as when connected by gears or pinions in the same way as the hands of a watch, or intermittent, as when caused by transfer devices operating only when one hand has completed a rotation.
121. **SINGLE-AXIS, DIAL AND HAND, SINGLE-HAND.** Registers whose counting devices comprise a graduated dial and a single hand or pointer moving thereover.
Search Class—
 235—REGISTERS, subclass 103, Rotation-counters.
122. **SINGLE-AXIS, DISK.** Registers whose counting mechanism comprises a rotating disk having numbers on its face.
123. **BALL OR BUTTON INDICATOR.** Counting devices where balls or buttons movable upon a support are employed to count or keep tally of a game—such, for instance, as billiards.
Search Class—
 235—REGISTERS, subclasses 18, Cash-registers, Checks, Balls, and 68, Calculators, Ball.
124. **BAR AND SCALE.** Registers embodying a pointer moving along a graduated bar.
125. **BELT.** Registering-machines wherein the elements instead of being cylinders or disks are movable belts bearing numerals.
126. **CARD.** Cards or paper slips, etc., employed in games to keep tally of the points or of other data.
127. **PIVOTED-INDICATOR.** Devices for keeping count of the points in a game or for equivalent purpose, comprising indicators pivoted to a base and adapted to be turned on their pivots—as, for example, from a horizontal to a vertical position—to indicate the desired data.
128. **ALARM MECHANISM.** Mechanism connected to registering devices of any character for sounding an alarm, as by ringing a bell or in any other manner.
129. **FULL-STROKE MECHANISM.** Devices for compelling a reciprocating part to be actuated to its full extent before it can be returned.
130. **LOCKING MECHANISM.** Devices (except key-locks, subclass 27, under cash-registers) for positively locking a part against movement, either temporarily until the machine shall have operated to a certain extent or for such a time as the operator may desire.
131. **OVERTHROW-PREVENTERS.** Devices for preventing the accidental movement of a part or for preventing a register-wheel or other moving part from being carried by momentum farther than it should go.
132. **STOP MECHANISM.** Devices for stopping the movement of a part at a particular or predetermined point.
133. **TRANSFER MECHANISM.** Devices, not classified in other subclasses of transfer mechanism, whereby a register-wheel of higher order is advanced one step each time a wheel of the next lower order has made a complete rotation.
134. **TRANSFER MECHANISM, CAM-AND-LEVER.** Transfer devices wherein the wheel of lower order has connected therewith or placed thereon a cam or eccentrically-disposed pin acting upon a lever connected with which is a pawl or equivalent that actuates the wheel of higher order.
135. **TRANSFER MECHANISM, DEEP-NOTCH.** Transfer devices wherein the register-wheels have attached thereto ratchet-wheels, each wheel having one notch deeper than the rest, these notches being of successively-increasing depth in the several wheels, whereby the actuating pawl or pawls are permitted at each complete rotation of a wheel to move one step the wheels of the next higher orders.
136. **TRANSFER MECHANISM, DIFFERENTIAL GEARS.** Transfer mechanism comprising a pinion or equivalent meshing with gears attached to or connected with two register-wheels, the gears having teeth differing in number, so that one moves at a rate different from the other.
137. **TRANSFER MECHANISM, INDEPENDENT-ACTUATOR.** Transfer mechanism wherein the complete rotation of a register-wheel sets a device into such a position that by a subsequent movement and by an independent actuating device it is caused to actuate one step the wheel of next higher order.

CLASS 235—Continued.

138. **TRANSFER MECHANISM, INDEPENDENT-ACTUATOR, SUCCESSIVE.** Transfer mechanism similar to that in subclass 137, except that the independent actuating device moves successively from one order to another.
139. **TRANSFER MECHANISM, INTERMEDIATE-PINION.** Transfer devices comprising a pinion between each two register-wheels on a shaft parallel to that of said wheels, said pinion being actuated by the gear of one register-wheel and actuating the gear of the wheel of higher order, one of the gears or pinions of the set having a single tooth, so that the wheel of higher order is moved intermittently from one number to the next at each complete rotation of the wheel of lower order.
140. **TRANSFER MECHANISM, SIDE-TOOTH.** Transfer devices wherein each register-wheel has a single tooth upon its side (or periphery) which at each complete rotation engages with a ratchet-tooth on the wheel of next higher order, moving it one step.

CLASS 235—Continued.

141. **TRANSFER MECHANISM, SIDE-TOOTH, LOCK.** Transfer mechanism similar to that of subclass 140, except that the wheel of higher order is locked from accidental movement when the transfer is not being effected.
142. **TRANSFER MECHANISM, TRAVELING - PAWL.** Transfer devices comprising a pawl pivoted to and moving with a register-wheel which when the wheel has completed a rotation is moved radially with respect to the wheel and into engagement with a pin or tooth on the wheel of next higher order for a time sufficient to move the latter one step.
143. **TRANSFER MECHANISM, TRAVELING - PAWL, SIDE-ACTION.** Transfer devices similar to those in subclass 142, except that the pivoted pawl has a movement transverse to the plane of the register-wheel.
144. **ZERO-SETTING DEVICES.** Devices by which the register of a calculator, cash-register, or other machine is returned to zero or "cleared out."

CLASS 240.—ILLUMINATION.

DEFINITIONS.

Class.

This class is limited to illumination by artificial light. It includes lighting systems, the protection and support of light sources or generators, and the distribution of the light therefrom for illumination. It does not include the light source or generator *per se*, but does include the combination of a light source with a protector, support, or distributor.

Light sources or generators of the combustion type—such as gaseous, liquid, or solid fuel illuminating burners—are classified in class 67, ILLUMINATING BURNERS. Those of the electrical type are classified in class 176, ELECTRIC LAMPS.

Class 240 includes light generator protectors—such as lanterns, globes, chimneys, and guards—the supports and holders specially adapted thereto, and artificial light distributors and modifiers, such as reflectors, refractors, and shades. The distribution of daylight for illumination is classified in class 88, OPTICS, subclass 57.5, Building lights, and the subclasses thereunder, and in class 94, PAVING, subclass 7, Vault covers. The distribution of artificial light for spectacular effects and for the conveyance of intelligence is classified in class 88, OPTICS, subclasses 16, Motion Picture Apparatus, and the subclasses thereunder, and in 24, Projecting apparatus, and the subclasses thereunder; in class 40, CARD, PICTURE, AND SIGN EXHIBITING, subclasses 40, Changeable exhibitors, Fluid operated, Rotatable, Illuminated; 77, Changeable exhibitors, rotatable, illuminated; 130, Signs, Illuminated; 131, Signs, Illuminated, Lamp attachments; 132, Signs Illuminated, Lamp boxes, and 133, Signs, Illuminated, Lamp boxes, Perforated face, or in 46, GAMES AND TOYS, subclass 70, Theater appliances.

Subclasses.

1. MISCELLANEOUS. Miscellaneous devices for illuminating with artificial light.

Search Classes—

- 9—BOATS AND BUOYS, subclass 8.3, Buoys, Illuminating.
- 32—DENTISTRY, subclass 27, Mouth mirrors.
- 40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 130, Signs, Illuminated, and the subclasses thereunder.
- 46—GAMES AND TOYS, subclass 70, Theater appliances.
- 48—GAS, HEATING AND ILLUMINATING, appropriate subclasses.
- 58—HOROLOGY, subclass 50, Clocks, Illuminated.
- 67—ILLUMINATING BURNERS, appropriate subclasses.
- 73—MEASURING INSTRUMENTS, subclass 125, Compasses.
- 88—OPTICS, subclasses 1, Miscellaneous; 16, Motion Picture Apparatus, and the subclasses thereunder, and 24, Projecting apparatus, and the subclasses thereunder.
- 114—SHIPS, subclass 66, Building, Observation boats.
- 116—SIGNALS, subclasses under Signals, and 22, Semaphores.
- 126—STOVES AND FURNACES, subclasses 209, Foot warmers, Liquid or gaseous fuel, Combined heater and lantern, and 267, Heaters, Lunch, Liquid or gaseous fuel, Dinner buckets, Combined bucket and lantern.
- 128—SURGERY, subclasses 24, Speculums, and 43, Laryngoscopes.
- 161—TIME CONTROLLING MECHANISM, subclasses 9, Valve actuating mechanism, Gas cocks; 11, Lighting mechanism, and the subclasses thereunder.
- 176—ELECTRIC LAMPS, appropriate subclasses.
- 246—RAILWAY SIGNALING, subclasses 15, Signals, Bar, and 37, Signals, Light.
- 232—DEPOSIT AND COLLECTION RECEPTACLES, subclass 13, Fare boxes, Illumination.

2. COMBINED LIGHT AND STRUCTURE. Includes the combination of an illuminator with other devices or structures not otherwise classifiable.

3. COMBINED LIGHT AND STRUCTURE, ARENA. Devices for illuminating stages, athletic parks, race tracks, exhibition places, or like arenas.

Note.—Includes devices for varying the color or intensity of the light, but does not include scenic effects or illusions, for which see class 46, GAMES AND TOYS, subclass 70, Theater appliances, or class 88, OPTICS, subclasses 16, Motion Picture Apparatus, and 24, Projecting apparatus. Includes foot, spot, bunch, and side lights for stages.

Search Class—

- 240—ILLUMINATION, subclass 6, Combined light and structure, Show case.

4. COMBINED LIGHT AND STRUCTURE, FURNITURE. Illuminating devices combined with or specially adapted to be secured to articles of furniture, such as desks, pianos, etc.

Search Class—

- 240—ILLUMINATION, subclass 6, Combined light and structure, Show case.

5. COMBINED LIGHT AND STRUCTURE, OVEN. Devices containing light sources for illuminating the interior of ovens and the like, generally bakers' ovens. The device may be inter-connected with the oven door, so that it is turned on or off or exposed or concealed upon operating the door.

Note.—For transparent windows for illuminating ovens see class 126, STOVES AND FURNACES, subclasses 200, Stove doors and windows, Transparent panel, and 213, Stove lids and tops, Illuminating.

CLASS 240—Continued.

Search Classes—

- 58—HOROLOGY, subclass 50, Clocks, Illuminated.
- 73—MEASURING INSTRUMENTS, subclass 125, Compasses.
- 107—BREAD, PASTRY, AND CONFECTION MAKING, subclass 55, Bakers' ovens, and the subclasses thereunder.
- 177—ELECTRIC SIGNALING, subclass 203, Circuit closers, Lock.
- 232—DEPOSIT AND COLLECTION RECEPTACLES, subclass 13, Fare boxes, Illumination.

6. COMBINED LIGHT AND STRUCTURE, SHOW CASE. Illuminating devices specially adapted to or combined with show cases, shop windows, or the like. Includes picture lighters for art galleries.

Search Class—

- 240—ILLUMINATION, subclasses 4, Combined light and structure, Furniture, and 3, Combined light and structure, Arena.

7. COMBINED LIGHT AND STRUCTURE, VEHICLE. Illuminating devices combined with or specially adapted to vehicles. The vehicle is generally a railway car.

Search Classes

- 240—ILLUMINATION, subclass 43, Lanterns, Projectors, Dashboard type.
- 116—SIGNALS, subclass 9, Signals, Car.
- 232—DEPOSIT AND COLLECTION RECEPTACLES, subclass 13, Fare boxes, Illumination.

8. COMBINED LIGHT AND STRUCTURE, VEHICLE, COMBINED INTERIOR AND EXTERIOR. Lights of the vehicle type that simultaneously illuminate the interior of the vehicle and cast a beam on the exterior. This exterior beam may illuminate a light signal, the platform steps, or entry. The light source may be within or without the vehicle.

- 8.4. COMBINED LIGHT AND STRUCTURE, PORTABLE, SELF-CONTAINED, ELECTRIC. The combination of an illuminator with another device or structure wherein the combination constitutes a unitary readily carried structure and wherein the illuminator comprises an electric light and a source of electrical energy.

Search Class—

- 240—ILLUMINATION, subclasses 7, Combined light and structure, Vehicle, and 8, Combined light and structure, Vehicle, Combined interior and exterior, for vehicle lamps.

- 8.5. PORTABLE, SELF-CONTAINED. ELECTRIC LAMPS. Electric light sources combined with a source of electrical energy therefor, wherein the combination constitutes a unitary readily carried or transported device.

Search Classes—

- 175—ELECTRICITY, GENERAL APPLICATIONS, the subclasses under Igniting devices, and 219, ELECTRIC HEATING AND RHEOSTATS, subclass 32, Heaters, Tools and instruments, Burning, Igniters, for portable battery igniting devices.

9. SYSTEMS. The combination of a plurality of illuminators where the invention resides in their arrangement.

10. DECORATIVE LIGHTS. Devices associated with illuminating devices whose object is to give a pleasing effect to the eye.

11. LANTERNS. Casings not otherwise classifiable for protecting light sources or for modifying the distribution of the light therefrom.

12. LANTERNS, BARREL ILLUMINATORS. Lanterns for illuminating the interior of barrels, vats, tanks, and similar receptacles, the light carrying portion of the lantern not being introduced into or allowed to come in direct contact with the atmosphere within the receptacle owing to the presence of explosive or non-combustible gases.

Search Classes—

- 240—ILLUMINATION, subclass 5, Combined light and structure, Oven.
- 32—DENTISTRY, subclass 27, Mouth mirrors.
- 58—HOROLOGY, subclass 50, Clocks, Illuminated.
- 73—MEASURING INSTRUMENTS, subclass 125, Compasses.
- 128—SURGERY, subclasses 24, Speculums, and 43, Laryngoscopes.
- 232—DEPOSIT AND COLLECTION RECEPTACLES, subclass 13, Fare boxes, Illumination.

13. LANTERNS, CANDLE TYPE. Lanterns specially designed to use a candle as a light source.

Search Class—

- 240—ILLUMINATION, subclasses 17, Lanterns, Lamp chimney type, and 14, Lanterns, Carriage.

14. LANTERNS, CARRIAGE. Lanterns specially designed to be used as the side lights of carriages or similar vehicles. The lantern casing is rectangular, with a plurality of transparent faces.

15. LANTERNS, DARK. Lanterns equipped with means, generally shutters or screens, for cutting off the light rays at will.

Search Class—

- 240—ILLUMINATION, subclasses 5, Combined light and structure, Oven; 20, Lanterns, Photographic; 23, Lanterns, Signal, Color screen; 39, Lanterns, Hand, Color screen, and 47, Lanterns, Projectors, Screen.

CLASS 240—Continued.

16. LANTERNS, JACK-O'-LANTERNS. Lanterns in which the casing is made to represent a face, the light issuing through the features.

17. LANTERNS, LAMP CHIMNEY TYPE. Lanterns composed of an ordinary lamp chimney, a base, and a frame, generally of wire. The lantern may or may not have a top or dome. The light source is usually a candle. The device is of an impromptu nature.

- 17.5. LANTERNS, ELECTRIC SAFETY. Lanterns having electric light sources and which are provided with mechanism responsive to dangerous conditions for extinguishing the light. Examples of such conditions are the presence of combustible gases or the fracture of an essential part of the lantern.

18. LANTERNS, MINER'S SAFETY. Lanterns that are provided with fine screens at the openings in the lantern casing to prevent the flame from igniting combustible gases which may surround the lantern. The "Davy lamp."

Search Class—

240—ILLUMINATION, subclasses 17.5, Lanterns, Electric safety, for electric safety lamps, and 121, Spark arresters.

19. LANTERNS, MINER'S SAFETY, LOCKS. Lanterns of the miner's safety or "Davy lamp" type, wherein the invention resides in the lock or means for preventing the unauthorized opening of the lantern, as in the mine.

20. LANTERNS, PHOTOGRAPHIC. Lanterns designed to give a non-actinic light for use in photographers' dark rooms. The light source contains actinic rays which are cut off or absorbed by the medium in the lantern window.

21. LANTERNS, SHIP'S RUNNING LIGHTS. Lanterns required by law to be displayed upon a vessel, such as the mast head and port or starboard side lights.

22. LANTERNS, SIGNAL. Lanterns provided with a number of lenses or bull's-eyes of substantially the same size, such as train markers.

Search Classes—

116—SIGNALS, subclass 9, Signals, Car.

246—RAILWAY SIGNALING, subclasses 15, Signals, Bar, and 37, Signals, Light.

23. LANTERNS, SIGNAL, COLOR SCREEN. Lanterns of the signal type that are equipped with devices, generally colored transparent or translucent screens, by means of which the color of the light may be changed without bodily moving the lantern casing itself.

Search Class—

240—ILLUMINATION, subclasses 15, Lanterns, Dark; 20, Lanterns, Photographic; 39, Lanterns, Hand, Color screen, and 47, Lanterns, Projectors, Screen.

24. LANTERNS, SIGNAL, ROTATABLE. Lanterns of the signal type wherein the bull's-eyes give different colors and wherein the invention resides in providing means whereby the lantern may be bodily revolved on its support, so as to change the color indication. The support forms an integral part of the lantern.

25. LANTERNS, STREET. Lanterns designed for street lighting, generally of the lamp post type.

Search Class—

40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 131, Signs, Illuminated, Lamp attachments.

26. LANTERNS, SUBMARINE. Lanterns which are designed to operate while beneath the surface of the water or similar fluids.

Note.—Submarine illuminators combined with sight tubes or similar devices are classified in class 88, OPTICS, subclass 1, Miscellaneous, and class 114, SHIPS, subclass 66, Building, Observation boats.

Note.—Submarine illuminators combined with floating supports and designed to act as fish decoys or to hold fish nets are classified in class 43, FISHING AND TRAPPING, subclass 4, Fishing, Floats.

Note.—Submarine lanterns combined with fish decoys, such as bait holders, are classified in class 43, FISHING AND TRAPPING, subclass 20, Traps, Fish.

Note.—Burners designed to operate with the flame in contact with the surrounding water are in class 60, MISCELLANEOUS HEAT ENGINE PLANTS, subclass 31, Pressure generators, Steam, Combustion products injected, Liquid and gaseous fuel burners.

Search Classes—

240—ILLUMINATION, subclasses 6, Combined light and structure, Show case; and 7, Combined light and structure, Vehicle.

43—FISHING AND TRAPPING, subclasses 4, Fishing, Floats, and 20, Traps, Fish.

88—OPTICS, subclass 1, Miscellaneous.

114—SHIPS, subclass 66, Building, Observation boats.

27. LANTERNS, TUBULAR. That type of lantern in which a portion of the products of combustion is led back to the flame or in which the air, or a portion thereof, for combustion is preheated by the products of combustion.

Search Class—

67—ILLUMINATING BURNERS, subclasses 94, Gaseous fuel burners, Incandescent, Inverted; 97, Gaseous fuel burners, Incandescent, Upright, Preheater, and 108, Gaseous fuel burners, Regenerative.

CLASS 240—Continued.

28. LANTERNS, TUBULAR, BASES. Tubular lanterns where the invention relates to the lower part of the structure. Generally refers to the manner in which the tubes lead to the burner.

29. LANTERNS, TUBULAR, DOMES. Tubular lanterns where the invention relates to the upper part of the structure. Generally includes the hoods or domes at the upper end of the lantern, which connect with the upper end of the tubes and which allow the escape of the products of combustion.

30. LANTERNS, TUBULAR, GLOBE OPERATORS. Tubular lanterns where the invention resides in the means for moving the globe into or out of operative position.

31. LANTERNS, TUBULAR, GLOBE OPERATORS, COMBINED LIFTING AND SWINGING. Tubular lanterns in which the invention resides in means for imparting to the globe both a lifting and a swinging motion, in order to move it into or out of operative position. These motions may be simultaneous or successive.

32. LANTERNS, TUBULAR, GLOBE OPERATORS, LIFTING. Tubular lanterns in which the invention resides in means for vertically lifting or lowering the globe, in order to move it into or out of operative position.

Search Class—

240—ILLUMINATION, subclass 39, Lanterns, Hand, Color screen.

33. LANTERNS, TUBULAR, GLOBE OPERATORS, SWINGING. Tubular lanterns in which the invention resides in the means for swinging the globe in a vertical plane, in order to move it into or out of operative position.

Search Class—

67—ILLUMINATING BURNERS, subclass 13, Igniting devices, Lamp, Separable.

34. LANTERNS, TUBULAR, TUBES. Devices where the invention resides in the construction of the tubes of tubular lanterns.

35. LANTERNS, ANGLE. Lanterns with transparent bottoms and with the light source inverted or inclined, so that no shadow is cast beneath.

Search Class—

67—ILLUMINATING BURNERS, subclasses 35, Liquid fuel; 94, Gaseous fuel burners, Incandescent, Inverted, and 95, Gaseous fuel burners, Incandescent, Inclined.

36. LANTERNS, COLLAPSIBLE. Lanterns or lights that may be folded, collapsed, or knocked down.

37. LANTERNS, CONVERTIBLE. Lanterns, lamps, or lights, that are designed to use a plurality of light sources, such as candles, liquid or gaseous fuel burners, or electric lights. One of the light sources may be replaceable by another, or there may be a plurality of light sources present in the device, one being a reserve to be used in case the other source or sources fail.

Search Class—

240—ILLUMINATION, subclass 72, Light supports, Brackets, Combined.

38. LANTERNS, HAND. Portable lanterns that are designed to be carried by the hand and which do not concentrate the light in any particular direction. They are generally of the railway hand signal lantern type.

39. LANTERNS, HAND, COLOR SCREEN. Lanterns of the hand type that are equipped with devices, generally colored transparent or translucent screens, by means of which the color of the light may be changed.

Search Class—

240—ILLUMINATION, subclasses 15, Lanterns, Dark; 20, Lanterns, Photographic; 23, Lanterns, Signal, Color screen, and 47, Lanterns, Projectors, Screen.

40. LANTERNS, HAND, FRAMES. Lanterns of the hand type in which the invention resides in the frame connecting the dome with the base. The frame forms an integral part of the lantern.

Note.—Removable frames or guards are classified in this class, subclass 102, Guards.

41. LANTERNS, PROJECTORS. Lanterns which are designed to project the greater part of the light in a more or less concentrated beam, for the purpose of illuminating the object upon which the light is directed. Includes "headlights."

Search Classes—

88—OPTICS, subclasses 16, Motion Picture Apparatus, and 24, Projecting apparatus.

176—ELECTRIC LAMPS, subclass 51, Arc, Side reflector type.

240—ILLUMINATION, subclass 8.5, Portable, Self-contained, Electric lamps, for electric bull's eyes.

42. LANTERNS, PROJECTORS, BICYCLE. Lanterns of the headlight or projector type specially adapted for use on bicycles or similar vehicles.

43. LANTERNS, PROJECTORS, DASHBOARD TYPE. Lanterns of the projector type that are specially adapted to be used on or are combined with the dashboard of vehicles, generally trolley cars.

CLASS 240—Continued.

44. **LANTERNS, PROJECTORS, ADJUSTABLE LIGHT OR REFLECTOR.** Lanterns of the projector type in which the light source and reflector are relatively adjustable.

45. **LANTERNS, PROJECTORS, DIMMERS.** Lanterns of the projector type that are provided with means for decreasing at will the intensity of the light without affecting the light source. They are generally vehicle headlights of high power. They operate by rendering the reflector inoperative, by throwing the light source out of focus or by increasing the angle of dispersion of the light beam.

Note.—Where the dimming is accomplished by changing from a high to a separate low power light source, the device is classified in subclass 37, Lanterns, Convertible.

46. **LANTERNS, PROJECTORS, MULTIPLE BEAM.** Lanterns of the projector type which throw a plurality of beams of light, some of which are used in the ordinary manner and others are used to illuminate signals, (other than signs,) train-markers, or to throw a more or less vertical beam, in order to give notice of approach while not in a direct line of sight.

Note.—When one or more of the beams are used to illuminate a sign, the device is classified in class 40, CARD, PICTURE, AND SIGN EXHIBITING, subclasses 130, Signs, Illuminated; 131, Signs, Illuminated, Lamp attachments; 132, Signs, Illuminated, Lamp boxes, and 133, Signs, Illuminated, Lamp boxes, Perforated face, which should be searched.

47. **LANTERNS, PROJECTORS, SCREEN.** Headlights or other projectors that are provided with means, generally screens, for completely cutting off or changing the color of the light at will.

Note.—See in this class, subclasses 15, Lanterns, Dark; 20, Lanterns, Photographic; 23, Lanterns, Signal, Color screen; 39, Lanterns, Hand, Color screen, and 45, Lanterns, Projectors, Dimmers.

48. **LANTERNS, PROJECTORS, VIBRATORY.** Lanterns of the projector type in which the beam of light is automatically and rapidly vibrated, in order to illuminate a field larger than the cross-section of the beam. The movement of the beam is accomplished by vibrating part or all of the lantern.

49. **LANTERNS, REVOLVING.** Lanterns in which all or part of the lantern structure is designed to be continually revolved. Includes flashing light house lanterns.

Search Classes—

40—CARD, PICTURE, AND SIGN EXHIBITING, subclasses 40, Changeable exhibitors, Fluid operated, Rotatable, Illuminated, and 77, Changeable exhibitors, Rotatable, Illuminated.

46—GAMES AND TOYS, subclass 14, Buzzes and whirligigs.

50. **LANTERNS, BASES.** The base or lower end of the lantern structure. Includes the means for fastening the font to the lantern casing and the means for admitting air to the interior of the casing.

Search Class—

240—ILLUMINATION, subclass 80, Light supports, Chandeliers, Liquid fuel.

51. **LANTERNS, DOMES.** Hoods or domes at the upper end of the lantern, which allow the escape of the products of combustion and prevent the entry of gusts of wind.

Search Classes—

240—ILLUMINATION, subclass 120, Smoke bells.

98—PNEUMATICS, subclasses under Chimney cowls.

104—RAILWAYS, subclass 208, Yards and plants, Smoke jacks.

52. **LIGHT SUPPORTS.** Miscellaneous devices specially adapted to support light sources. Includes bails or handles specially adapted for use with lanterns.

Note.—Bails or handles of general application are classified in class 220, METALLIC SHIPPING AND STORING VESSELS, subclass 30, Bucket handles, and the subclasses thereunder.

Search Class—

248—SUPPORTS, appropriate subclasses.

53. **LIGHT SUPPORTS, CONVERTIBLE.** Light supports that are adjustable or convertible, so that they may be used as a wall bracket, pedestal, chandelier, or handle.

Search Class—

248—SUPPORTS, subclass 21, Convertible.

54. **LIGHT SUPPORTS, COMBINED GUARD AND HOLDER.** Portable combined guards and holders or handles, generally for incandescent electric lights.

55. **LIGHT SUPPORTS, CAMPAIGN TORCH.** Devices for connecting the ordinary campaign torch or flambeau to the staff. The connection is generally a swivel or gimbal.

Search Class—

67—ILLUMINATING BURNERS, subclass 55, Liquid fuel, Burners, Wick type, Chimneyless, for type of lamp.

56. **LIGHT SUPPORTS, CHRISTMAS TREE.** Supports designed to secure lights to Christmas trees and the like. The light sources are generally candles.

Search Class—

46—GAMES AND TOYS, subclass 14, Buzzes and whirligigs.

57. **LIGHT SUPPORTS, VEHICLE.** Light supports that are specially adapted to engage a portion of the vehicle, such as the axle, dashboard, or cover, generally without modification of the vehicle.

Search Classes—

135—TENTS, CANOPIES, UMBRELLAS, AND CANES, subclass 9, Canopy supports.

CLASS 240—Continued.

224—PACKAGE AND ARTICLE CARRIERS, subclass 29, Vehicle, and the subclasses thereunder.

58. **LIGHT SUPPORTS, VEHICLE, BICYCLE.** Light supports of the vehicle type that are specially adapted to be secured to a bicycle or similar velocipede, generally without modifying the velocipede structure.

Search Classes—

135—TENTS, CANOPIES, UMBRELLAS, AND CANES, subclasses 11, Canopy supports, Bicycle, and 13, Umbrella supports.

224—PACKAGE AND ARTICLE CARRIERS, subclass 30, Vehicle, Bicycle, and the subclasses thereunder.

59. **LIGHT SUPPORTS, BODY ATTACHED.** Devices for supporting a light upon the body.

Search Classes—

32—DENTISTRY, subclass 27, Mouth mirrors.

128—SURGERY, subclasses 24, Speculums, and 47, Laryngoscopes.

135—TENTS, CANOPIES, UMBRELLAS, AND CANES, subclass 12, Canopy supports, Body harness.

224—PACKAGE AND ARTICLE CARRIERS, subclass 5, Body and belt attached, and the subclasses thereunder.

60. **LIGHT SUPPORTS, BODY ATTACHED, CAP.** Devices for supporting a light upon the cap or other head gear of a person. The light is generally a miner's lamp.

Search Classes—

32—DENTISTRY, subclass 27, Mouth mirrors.

128—SURGERY, subclass 24, Speculums, and 43, Laryngoscopes.

61. **LIGHT SUPPORTS, DIRIGIBLE.** Supports for lights, generally head or search lights, whereby the light may be steered or directed in the desired direction. These devices differ from the ordinary adjustable light supports in that they are designed to keep the light on the object as it moves, while the ordinary adjustable support is designed to be set and then left in that adjusted position. The dirigible supports are generally mounted on a vehicle.

62. **LIGHT SUPPORTS, DIRIGIBLE, AUTOMATIC.** Light supports of the dirigible type that are mounted on a vehicle and which automatically swing when the vehicle turns, so that the light follows the curve of the road.

63. **LIGHT SUPPORTS, ADJUSTABLE FOR TRIMMING.** Supports that normally hold the light in an inaccessible position and that may be adjusted, so that the light may be reached for trimming, replenishing, cleaning, repairing, etc.

Note.—Light supports that are vertically adjustable to a plurality of operative positions are classified in this class, subclass 67, Vertically adjustable, and the subclasses thereunder. Metallic skeleton towers which include a device for elevating a lamp are classified in class 189, METALLIC BUILDING STRUCTURES, subclass 14, Skeleton towers, Arrangement, Elevating.

64. **LIGHT SUPPORTS, ADJUSTABLE FOR TRIMMING, ELECTRIC, POST.** Light supports of the "adjustable for trimming" type, particularly adapted for electric lamps, and wherein a post is included or other means of supporting the same from the ground. Where the patent includes more of the support than the hanger—as, for example, a particular mast arm—the patent is likewise included in this subclass.

Search Class—

240—ILLUMINATION, subclasses 72, Light supports, Brackets, Combined, and 73, Light supports, Brackets, Electric.

65. **LIGHT SUPPORTS, ADJUSTABLE FOR TRIMMING, ELECTRIC, POST, SWITCH.** Supports for electric lamps of the "adjustable for trimming" post type, including more of the support than the hanger and provided with an electric switch. In many cases the switch operates to connect the lamp with the line circuit when the lamp has reached its inaccessible position.

Search Class—

240—ILLUMINATION, subclasses 72, Light supports, Brackets, Combined, and 73, Light supports, Brackets, Electric.

66. **LIGHT SUPPORTS, ADJUSTABLE FOR TRIMMING, ELECTRIC, SWITCH.** Light supports of the "adjustable for trimming" type, particularly adapted for electric lamps, and provided with an electric switch. In many cases the switch operates to form connection between the line wires and lamp upon the latter attaining its inaccessible position. This subclass, however, contains no more than the hanger as an element of the lamp support, a post or supporting arm therefrom, being included under posts.

67. **LIGHT SUPPORTS, VERTICALLY ADJUSTABLE.** Miscellaneous subclass of light supports capable of vertical adjustment. Includes chandeliers, brackets, or stands of the vertically adjustable type. Includes electric or combustible light source supports.

Note.—Vertically adjustable supports of general application are in class 248, SUPPORTS.

Note.—Vertically adjustable supports including electric supply means and of general application are also in class 248, SUPPORTS.

68. **LIGHT SUPPORTS, VERTICALLY ADJUSTABLE, CLAMP.** Vertically adjustable light supports that are held against the action of gravity by a positive clamp, dog, lock, clutch, or set screw which must be manually released to adjust the support.

Search Classes—

166—CURTAINS, SHADES, AND SCREENS, subclass 35, Shade, Rollers, Ratchet, and pawl.

248—SUPPORTS, subclass 3, Adjustable, Vertical, Clamp, and 4, Adjustable, Vertical, Clamp, Electric.

CLASS 240—Continued.

69. **LIGHT SUPPORTS, VERTICALLY ADJUSTABLE, COUNTERWEIGHT.** Vertically adjustable light supports that are held against the action of gravity by a counterweight.

Search Class—

248—SUPPORTS, subclasses 5, Adjustable, Vertical, Counterweight, and 6, Adjustable, Vertical, Counterweight, Electric.

70. **LIGHT SUPPORTS, VERTICALLY ADJUSTABLE, FRICTION.** Vertically adjustable light supports that are held against the action of gravity by frictional engagement of the relatively adjustable parts, the support being adjusted by applying a force sufficient to overcome this frictional resistance.

Search Classes—

156—CURTAINS, SHADES, AND SCREENS, subclass 34, Shade, Rollers, Friction brake.

248—SUPPORTS, subclasses 7, Adjustable, Vertical, Friction, and 8, Adjustable, Vertical, Friction, Electric.

71. **LIGHT SUPPORTS, VERTICALLY ADJUSTABLE, SPRING DRUM.** Vertically adjustable light supports that are held against the action of gravity by a flexible member wound on a spring drum.

Search Classes—

24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 14, Article holders, Reel.

40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 85, Changeable exhibitors, Single reel and web, Spring rewind.

43—FISHING AND TRAPPING, subclass 33, Fishing, Reels, Spring operated.

46—GAMES AND TOYS, subclass 8, Billiard appliances, Chalk cups.

51—GRINDING AND POLISHING, subclass 16, Metal, Strops, hones, and rifles.

54—HARNESSES, subclass 70, Checking and unchecking devices.

68—LAUNDRY, subclass 14, Clothes-line reels.

119—ANIMAL HUSBANDRY, subclass 23, Confining and housing devices, Fowl, Bird houses; 124, Restraining devices, Hitching, Post, Automatic take-up.

156—CURTAINS, SHADES, AND SCREENS, subclass 36, Shade, Rollers, Spring.

173—Electricity conductors, subclass 367, Conductors, Take-up.

175—ELECTRICITY, GENERAL APPLICATIONS, subclass 289, Switches, Mechanical, Rotary.

179—TELEPHONY, subclass 155, Supports, Suspension, Reels.

191—ELECTRICITY, ELECTRIC RAILWAYS, subclass 35, Systems, Current distribution, Overhead, Trolleys, Catchers.

242—WINDING AND REELING, subclasses 98, Reeling and unreeling, Reels, Carriers, Hand or body, Spring drum article holders, 102, Reeling and unreeling, Reels, Clothes-line type, Spring drum, 107, Reeling and unreeling, Reels, Spring drum type, and 109, Reeling and unreeling, Reels, Spring-drum type, Vertical.

248—SUPPORTS, subclasses 9, Adjustable, Vertical, Spring, and 10, Adjustable, Vertical, Spring, Electric.

72. **LIGHT SUPPORTS, BRACKETS, COMBINED.** Supports of the bracket or wall attached type specially adapted for a plurality of different kinds of light sources, electricity, liquid, solid, or gaseous fuel. The line between these devices and those in subclass 37, Lanterns, Convertible, is that in the former the several light sources may be used simultaneously, while in the latter the different light sources can only be used alternately.

Search Class—

173—ELECTRICITY, CONDUCTORS, subclass 326, Connectors, Pipe couplers.

73. **LIGHT SUPPORTS, BRACKETS, ELECTRIC.** Supports of the bracket or wall-attached type specially adapted for light sources of the electric type.

74. **LIGHT SUPPORTS, BRACKETS, GASEOUS FUEL.** Supports of the bracket or wall-attached type specially adapted for light sources of the gaseous fuel type.

75. **LIGHT SUPPORTS, BRACKETS, LIQUID FUEL.** Supports of the bracket or wall-attached type specially adapted for light sources of the liquid fuel type.

76. **LIGHT SUPPORTS, CHANDELIERS.** Supports depending from the ceiling or like surface and specially adapted to hold a light source.

77. **LIGHT SUPPORTS, CHANDELIERS, COMBINED.** Supports of the chandelier or ceiling supported type specially adapted for a plurality of different kinds of light sources, electric, liquid, gaseous, or solid fuel.

Search Class—

240—ILLUMINATION, subclass 37, Lanterns, Convertible.

78. **LIGHT SUPPORTS, CHANDELIERS, ELECTRIC.** Supports of the chandelier or ceiling supported type specially adapted for electric light sources.

79. **LIGHT SUPPORTS, CHANDELIERS, GASEOUS FUEL.** Supports of the chandelier or ceiling supported type specially adapted for gaseous fuel light sources.

80. **LIGHT SUPPORTS, CHANDELIERS, LIQUID FUEL.** Supports of the chandelier or ceiling supported type specially adapted for liquid fuel light sources.

81. **LIGHT SUPPORTS, STANDS, ELECTRIC.** Supports of the pedestal or stand type specially adapted for electric light sources.

CLASS 240—Continued.

82. **LIGHT SUPPORTS, STANDS, GASEOUS FUEL.** Supports of the pedestal or stand type specially adapted for gaseous fuel light sources.

83. **LIGHT SUPPORTS, STANDS, LIQUID FUEL.** Supports of the pedestal or stand type specially adapted for liquid fuel light sources. Includes the connection between the standard and the lamp font.

84. **LIGHT SUPPORTS, POSTS.** Non-adjustable supports of the lamp post type that are specially adapted to support light sources. They differ from subclasses 81, 82, and 83 herein in that they are secured to the floor or ground, while the latter merely rest upon a horizontal surface.

Note.—For posts *per se* of wood, plastic material, or metal see classes 20, WOODEN BUILDINGS; 72, MASONRY AND CONCRETE STRUCTURES, and 189, METALLIC BUILDING STRUCTURES, respectively.

Search Class—

39—FENCES.

85. **LIGHT SUPPORTS, BRACKET AND CHANDELIER HANGERS.** Devices specially adapted to secure light supporting brackets or chandeliers, as from walls or ceilings.

Note.—Ceiling blocks which are designed to hold the lamp suspended by wires and are without any additional supporting connection between the hanger and lamp are classified in class 173, ELECTRICITY, CONDUCTORS, subclasses 327, Connectors, Ceiling blocks, and 329, Connectors, Quick detachable, Ceiling blocks. Outlet boxes, unless limited to the lighting art, are included in class 247, ELECTRICITY, CONDUITS, subclass 5, House wiring, Outlet boxes.

86. **LIGHT SUPPORTS, BRACKET AND CHANDELIER HANGERS, ARC LAMP HANGERS.** Chandelier hangers specially adapted to support arc lamps.

Search Class—

240—ILLUMINATION, subclass 63, Light supports, Adjustable for trimming, and the subclasses thereunder.

87. **LIGHT SUPPORTS, BRACKET AND CHANDELIER HANGERS, CANOPIES.** Devices specially adapted to be applied to the pipe or conduit of brackets or chandeliers where they are secured to the wall or ceiling, in order to hide the juncture. They are generally plates or shields.

Note.—For canopies of general application capable of use on any pipe see class 126, STOVES AND FURNACES, subclass 317, Stove-pipe thimbles, Floor or ceiling plates.

Search Classes—

20—WOODEN BUILDINGS, subclass 77, Ceiling centerpieces.

70—LOCKS AND LATCHES, subclass 12, Knob roses.

88. **LIGHT SUPPORTS, CORD SUPPORTED.** Devices for securing light sources (generally incandescent lamps) to the supporting conductor or cord, so that the light source may be adjusted.

Note.—The device is either directly connected to the light source or forms an integral part thereof. The ordinary cord adjustment placed intermediate the ends of the conductor is classified in class 24, BUCKLES, BUTTONS, CLASPS, ETC., subclass 115, Cord and rope holders, and the subclasses thereunder.

89. **LIGHT SUPPORTS, ANTISLIPPING.** Devices applied to or forming part of lights for preventing slippage. These devices are generally spurs projecting from the bottom of the lantern to prevent displacement when placed on slippery surfaces.

90. **LIGHT SUPPORTS, RESILIENT.** Light supports that are made resilient for the purpose of protecting the light from injurious shocks or vibrations.

Search Classes—

240—ILLUMINATION, subclass 58, Light supports, Vehicle, Bicycle.

67—ILLUMINATING BURNERS, subclass 92, Gaseous fuel burners, Incandescent, Resilient support.

91. **LIGHT SUPPORTS, HARPS.** Frames, generally hung from above, for holding the light source or the various parts of a light—such as lamp fonts, chimneys, globes, shades, or smoke bells—in their proper position.

Note.—Where the frame also includes means of attachment to the wall, ceiling, table, or floor, the device becomes a bracket, chandelier, or stand and is classified under those heads.

92. **COMBINED LIGHT PROTECTORS AND MODIFIERS.** The combination of a globe, chimney, or similar light protector with a reflector, refractor, shade, or similar light modifier.

93. **COMBINED REFLECTORS AND REFRACTORS.** Combinations of reflectors and refractors that cooperate to modify the distribution of light.

94. **CHIMNEYS.** Devices that inclose and protect the light source, as well as induce a draft. Chimneys differ from globes in that they not only protect, but also induce a draft. Chimneys are generally elongated, while globes are more or less spherical.

Note.—Devices that protect the light source and induce a draft and in addition modify the distribution of light are classified in this class, subclass 92, Combined light protectors and modifiers.

95. **CHIMNEYS, ATTACHMENTS.** Attachments for chimneys, generally dampers or antibreakage devices. Does not include smoke bells or spark catchers.

Note.—For smoke bells and spark catchers see in this class, subclasses 120, Smoke bells, and 121, Spark arresters.

CLASS 240—Continued.

Search Class—

126—STOVES AND FURNACES, subclass 258, Heaters, Liquid or gaseous fuel, Attachments, Lamp, Chimney heaters, Article support.

96. CHIMNEYS, COMPOSITE. Chimneys that are composed of a plurality of separate parts. The chimney may be part transparent and part opaque or it may be made of separate parts to avert breakage by unequal expansion.

Search Class—

126—STOVES AND FURNACES, subclasses 235, Tool heaters, Liquid or gaseous fuel, Lamp attachments, and 258, Heaters, Liquid or gaseous fuel, Attachments, Lamp, Chimney heaters, Article support.

97. CHIMNEYS, SUPPORTS. Miscellaneous devices for supporting chimneys in position relative to the light source and not hereinbelow classified. Does not include shade, reflector, refractor, or globe supports.

Search Class—

240—ILLUMINATION, subclass 111, Shade reflector, or globe supports, and the subclasses thereunder.

98. CHIMNEYS, SUPPORTS, BASE. Chimney supports which engage the standard forms of chimneys at their lower ends.

Search Class—

240—ILLUMINATION, subclass 116, Shade, reflector, or globe supports, Base.

99. CHIMNEYS, SUPPORTS, BASE, MODIFIED CHIMNEYS. Chimney supports of the base type which require a special form of chimney base to engage therewith. Includes the modified chimney.

100. GLOBES. Devices that inclose and protect the light source and transmit the light therefrom without material modification of the light distribution. Includes colored globes. Globes differ from chimneys in that they are more or less spherical in shape, and their function is to protect, while chimneys are more or less elongated, and their function is not only to protect, but also to induce a draft.

Note.—Devices that protect the light source and modify the light distribution by refraction or by reflection are classified in this class, subclass 92, Combined light protectors and modifiers.

101. GLOBES, MANIPULATORS. Attachments or implements for removing globes, chimneys, etc., while in otherwise inaccessible places or while hot. Includes devices that may be cleaners, but not limited thereto.

Search Classes—

15—BRUSHING AND SCRUBBING, subclass 42, Chimney cleaners, Lamp.

56—HARVESTERS, subclass 99, Fruit gatherers.

57—HOISTING, subclass 113, Lifting, Store goods.

75—METALLURGY, subclass 182, Crucibles.

81—TOOLS, appropriate subclasses.

126—STOVES AND FURNACES, subclass 321, Stove implements, Fire tong.

102. GUARDS. Devices designed to be attached to the complete lamp or other light source to protect the same from mechanical injury or moisture or to protect persons from injury in handling the light source.

Search Class—

240—ILLUMINATION, subclasses 18, Lanterns, Miner's safety; 27, Lanterns, Tubular, and 40, Lanterns, Hand, Frames.

103. REFLECTORS. Opaque or translucent devices that modify the distribution of light from artificial light sources by reflection. Does not include the so-called "prismatic reflectors," which are classified in this class, subclass 106, Refractors. Includes reflector supports that form an integral part of the reflector.

Note.—Reflectors *per se* are classified in class 88, OPTICS, subclass 1, Miscellaneous.

Note.—Where the reflector is located in or modifies the construction of an incandescent lamp bulb, unless there be some other feature which would retain the patent in this class, the same is classified in class 176, ELECTRIC LAMPS, subclass 34, Incandescent, Reflectors and refractors.

Search Classes—

240—ILLUMINATION—subclasses 3, Combined light and structure, Arena, and 6, Combined light and structure, Show case.

95—PHOTOGRAPHY, subclass 82, Studios.

104. REFLECTORS, CANOPY. Opaque or translucent reflectors that are designed to reflect the light in the direction of the major axis of the light source. Includes reflector supports that are an integral part of the reflector.

Search Class—

240—ILLUMINATION, subclass 106, Refractors.

105. REFLECTORS, SIDE. Opaque or translucent reflectors that are designed to reflect the light at right angles to the major axis of the light source. Includes reflector supports that are an integral part of the reflector.

Note.—Arc lamps wherein the regulating means is modified so as to adapt the lamp for use with a side reflector are included in class 176, ELECTRIC LAMPS.

106. REFRACTORS. Devices which modify the distribution of light by refraction. Includes "prismatic reflectors."

Note.—Where the refractor is located in or modifies the construction of an incandescent lamp bulb, unless there be some other feature which would retain the patent in this class, the same is classified in class 176, ELECTRIC LAMPS.

CLASS 240—Continued.

Search Classes—

49—GLASS, subclass 92, Structure.

88—OPTICS, subclasses 57, Lenses, and 59, Building lights, Vault.

94—PAVING, subclass 7, Vault covers.

107. REFRACTORS, LIQUID. Refractors in which the refracting medium is a liquid, generally inclosed within a transparent casing.

108. SHADES. Miscellaneous devices for cutting off the light rays. These devices merely stop the light. They are not specially designed to reflect the light. Miscellaneous subclass of devices that modify the distribution of light by the interposition of an opaque body. Includes shade supports that form an integral part of the shade.

109. SHADES, CANOPY. Shades that are designed to cut off the light in the direction of the major axis of the light source. Includes shade supports that are an integral part of the shade.

110. SHADES, SIDE. Shades that are designed to cut off the light at right angles to the major axis of the light source. Includes shade supports that form an integral part of the shade.

Search Class—

240—ILLUMINATION, subclass 15, Lanterns, Dark.

111. SHADE, REFLECTOR, OR GLOBE SUPPORTS. Miscellaneous devices for supporting shades, reflectors, refractors, globes, or similar lamp parts in position relative to the light source and not hereinbelow classifiable. The support is not an integral part of the shade, etc.

Note.—Does not include chimney supports, which are classified in this class, subclass 97, Chimneys, Supports, and the subclasses thereunder.

112. SHADE, REFLECTOR, OR GLOBE SUPPORTS, CANDLE. Devices specially designed to support shades, reflectors, refractors, globes, or similar lamp parts upon candles. The support is not an integral part of the shade, etc.

Search Class—

240—ILLUMINATION, subclass 114, Shade, reflector, or globe supports, Double clamp.

113. SHADE, REFLECTOR, OR GLOBE SUPPORTS, DROP. Supports that allow the shade, reflector, refractor, globe, or similar lamp part to be readily dropped or otherwise moved out of the way relative to the light source to allow access to the light for the purpose of trimming the same. The support is not an integral part of the shade, etc.

Search Class—

240—ILLUMINATION, subclasses 30, Lanterns, Tubular, Globe manipulators, and the subclasses thereunder, and 118, Shade, reflector, or globe supports, Spider.

114. SHADE, REFLECTOR, OR GLOBE SUPPORTS, DOUBLE CLAMP. Supports that are provided with means, generally clamps, for readily securing the shade, reflector, refractor, globe, or similar lamp part to the support and also the support to the lamp or other point of attachment. The point of attachment is generally an incandescent electric light socket. The support is not an integral part of the shade, etc.

115. SHADE, REFLECTOR, OR GLOBE SUPPORTS, TOP. Supports which engage the shade, reflector, refractor, globe, or similar lamp part at the top or upper end, the support not being an integral part of the shade, etc.

Search Class—

240—ILLUMINATION, subclass 114, Shade, reflector, or globe supports, Double clamp.

116. SHADE, REFLECTOR, OR GLOBE SUPPORTS, BASE. Supports which engage the shade, reflector, globe, refractor, or similar lamp part at its lower end, the support not being an integral part of the shade, etc.

Search Class—

240—ILLUMINATION, subclass 98, Chimneys, Supports, Base.

117. SHADE, REFLECTOR, OR GLOBE SUPPORTS, ADJUSTABLE AND COLLAPSIBLE. Supports that are adapted to be adjusted to fit various sizes of shades, reflectors, refractors, globes, or similar lamp parts or that can be folded, collapsed, or knocked down, the support not being an integral part of the shade, etc.

118. SHADE, REFLECTOR, OR GLOBE SUPPORTS, SPIDER. Supports for shades, reflectors, refractors, globes, or similar lamp parts that consist merely of a series of radial arms directly engaging the shade, reflector, or globe, the support not being an integral part of the shade, etc.

Search Class—

240—ILLUMINATION, subclass 117, Shade, reflector, or globe supports, Adjustable and collapsible.

119. BURNER-TIP CLEANERS. Devices, generally hand implements, for clearing out or freeing the discharge openings of burner-tips.

Search Class—

158—LIQUID AND GASEOUS FUEL BURNERS, subclass 120, Valves and cleaners.

120. SMOKE BELLS. Devices placed over lights to prevent the heat or smoke therefrom blacking or otherwise injuring superimposed structures, generally the ceiling. When the device includes a flue for conveying the products of combustion from the light source to ventilate the room or structure, it is classified in class 98, PNEUMATICS, subclass 27, Ventilation, House. However, this subclass includes ventilating smoke bells where no building or extended flue is included.

CLASS 240—Continued.

Search Classes—

98—PNEUMATICS, subclass 27, Ventilation, House.

104—RAILWAYS, subclass 208, Yards and plants, Smoke jacks.

121. SPARK ARRESTERS. Screens or other devices for preventing the escape of sparks or solid burning bodies from or the entry of insects or dirt into globes, chimneys, or lantern casings. Does not include the flame screen of the Davy safety lamp, which is classified in this class, subclass 18, Lanterns, Miner's safety.

Search Class—

110—FURNACES, subclass 119, Spark arresters, and the subclasses thereunder.

122. SWITCHES AND VALVES. Switches and valves which are of use only in illuminating fixtures and which do not modify or are not modified by the light source itself.

CLASS 240—Continued.

123. SWITCHES AND VALVES, OPERATORS. Devices attached to inaccessible light control valves or switches for operating the same. Includes gas wrenches; also devices which are an extension of a gas key, wick-raiser, or switch and which are intended to be left upon its fixture.
Note.—Wrenches combined with igniters are in class 67, ILLUMINATING BURNERS, subclass 6, Igniting devices, Implements.

124. TAPS. Devices applied to gas fixtures whereby means are provided for attaching a tube, generally a flexible one, to supply a drop light or gas heater without destroying the utility of any of the fixtures' burner-tips as illuminators.
Note.—Electric taps where the current is tapped from an incandescent light socket are classified in class 173, ELECTRICITY, CONDUCTORS, subclass 334, Connectors, Quick detachable, Multiple connections, Taps.

Search Class—

137—WATER DISTRIBUTION, subclass 75, Mains and pipes, Pipes.

CLASS 242.—WINDING AND REELING.

DEFINITIONS.

Class.

This class includes and is limited to inventions in (1) winding flexible material—such as wire, cordage, and fabric or other sheet structures—upon or unwinding it from holders, including reels, bobbins or spools, forms or frames, or other holders for storage purposes; (2) the making by winding processes of articles such as cordage and twine balls, electromagnets and coils, cops, etc., or in applying wire or cordage material by winding to armatures, rings, pails, pipes, or other articles; (3) reels and reel carriers, bobbins and spools, and other coil or roll holders *per se*, spool, bobbin, and twine holders or supporters, and combinations of spools or bobbins, etc., with the material wound thereon as a commercial article or package not otherwise classifiable; (4) guides and tension devices employed in connection with winding devices, as well as those of general application; (5) detectors and stops employed in connection with winding machines, as well as those of general application to strand or web material.

The inventions classifiable under group 2 for making articles by winding may include other operations essential or incidental thereto, as applying adhesive to the layers of thread or to the thread itself in winding balls. Inventions in group 1 may include the waxing or wetting of thread in bobbin-winding.

The class does not include devices for winding flexible material upon such articles of indefinite length as wire, cordage, conductors, hose, etc., nor power devices employed in hauling or hoisting in which the rope or cable is but temporarily wound or unwound unless the invention is a mere reel structure or a feature peculiarly adapted for winding for storage purposes. For example, devices for traversing or laying cord or rope upon the holder are classifiable in this class, as are also winding drums and sand reels *per se*.

Devices wherein the hoisting feature is incidental and coordinate or subordinate to winding, as in spring-drum reels, are also classifiable in this class.

Reel or roll carriers and the like classifiable in this class are those in which the function is to serve as a holder for storage purposes or to facilitate winding or unwinding; but similar devices constructed primarily for displaying the material or for serving the purpose of store furniture are excluded.

Search Classes—

73—MEASURING INSTRUMENTS, subclass 9, Cloth-measuring machines, for combinations of winding machines with measuring instruments.

211—STORE FURNITURE, subclasses 18, Display-racks, Roll, for details, and 31, Serving apparatus, Roll-holders, for roll-holders for toilet and wrapping paper.

Subclasses.

1. MISCELLANEOUS. Miscellaneous inventions in winding or reeling not otherwise classifiable.

2. BALL OR MASS WINDING. Winding thread, twine, yarn, cord, etc., into masses, balls, or cylindrical packages.

Search Class—

19—CARDING, subclass 16, Balling heads, for balling sliver, yarn, etc.

3. BALL OR MASS WINDING, SPHEROIDS. Inventions for winding spherical masses, principally base, golf, or other playing balls, characterized by the absence of a winding spindle, a spherical core being usually substituted therefor. May include applying an adhesive or liquid to the strand that is wound.

Search Class—

154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 16, Ball-making, and the subclasses thereunder, for the making of playing balls of sectional or laminated structure.

4. RING-WINDING. Miscellaneous inventions for winding material, usually wire, upon a ring-shaped core. In this subclass are machines and processes for winding ring-shaped magnets, "loading coils," and the like with wire, though the subclass is not limited thereto.

Search Class—

28—CORDAGE, subclass 2, Banding, for somewhat analogous devices employed in banding strands together, as in making driving belts.

5. RING-WINDING, ARMATURES. Winding ring armatures or successively winding coils of wire on annular bodies.

6. RING-WINDING, TAPING AND INSULATING. Inventions for winding tape, bands, fiber, etc., or applying insulating material to rings or annular coils; also such inventions in combination with devices or processes for winding rings with wire or other conducting material.

Search Classes—

242—WINDING AND REELING, subclass 10, Cylinder and conoid winding, Magnets and coils, Taping and insulating, for taping and insulating features.

28—CORDAGE, subclass 6, Covering cord, and 173, ELECTRICITY, CONDUCTORS, subclass 244, Machines for covering, for taping and insulating features adapted to covering articles of indefinite length.

CLASS 242—Continued.

7. CYLINDER AND CONOID WINDING. Winding strand or web material, generally wire, upon cylinders or conoids of comparatively short length.

Search Classes—

28—CORDAGE, subclass 6, Covering cord, and 173, ELECTRICITY, CONDUCTORS, subclass 244, Machines for covering, for devices for winding cylinders of indefinite length, such as rope, wire, or conductors.

29—METAL-WORKING, subclass 23, Special work, Toothed-cylinder making, for making toothed cylinders, including the winding of toothed or notched wire.

41—ORNAMENTATION, subclass 3, Apparatus and appliances, Imitation-flower making, Stems and vines, for winding and making stems for artificial flowers and making decorative strands.

86—ARMS, PROJECTILES, AND EXPLOSIVE CHARGES, MAKING, subclass 2, Ordnance, for wiring guns.

93—PAPER MANUFACTURES, subclasses under Tube-machines, particularly 80, Tube-machines, Spiral-wind, and 81, Tube-machines, Convolute-wind, for winding paper tubes.

113—SHEET-METAL WARE, MAKING, subclass 35, Tube-making, Spiral seaming, which includes more than the mere winding—for example, seaming—for winding metal strips in tube-making and armoring electric cables.

140—WIRE-WORKING, subclasses 97, Applying wire, Card-clothing, Attaching, for winding card-clothing on cylinders, and 124, Implements, Coiling, for wire-coiling implements.

144—WOODWORKING, subclass 268, Wood-bending, Former, Pivotal, Coiling, for convolute winding in box and hoop making.

153—METAL-BENDING, subclass 64.5, Coiling, Flat wire, Edge winding, for winding flat wire or metal strips edgewise.

154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclass 7, Hose-making, Convolute wind, for winding devices employed in making hose and the like.

8. CYLINDER AND CONOID WINDING, ARMATURES. Applying a circumferential winding to the armatures or drums of electric machines or applying bands thereto.

Search Class—

153—METAL-BENDING, subclass 64.5, Coiling, Flat wire, Edge winding, for winding flat wire edgewise.

9. CYLINDER AND CONOID WINDING, MAGNETS AND COILS. Limited to winding magnets and coils for electrical use.

Search Classes—

242—WINDING AND REELING, subclass 25, Bobbin and cop winding, Wire, for the mere winding of wire on spools or bobbins for storage of the wire and for use as a commercial article.

155—METAL-BENDING, subclass 64.5, Coiling, Flat wire, Edge winding, for the winding of flat wire or metal strips edgewise.

175—ELECTRICITY, GENERAL APPLICATIONS, subclass 21, Electromagnets.

10. CYLINDER AND CONOID WINDING, MAGNETS AND COILS, TAPING AND INSULATING. Devices or processes for taping, applying, or inserting insulating material, usually in combination with wire-winding.

Search Classes—

28—CORDAGE, subclass 6, Covering cord, and 173, ELECTRICITY, CONDUCTORS, subclass 244, Machines for covering, for applying insulation to cables or conductors.

11. CYLINDER AND CONOID WINDING, PAILS AND PIPES. Limited to winding pails or pipes with wire, bands, or cordage.

12. CYLINDER AND CONOID WINDING, AXIALLY. Winding a cylindrical or conoidal body with material, usually wire, in such manner that the convolutions are wound in a plane at right angles to a diameter of the body—i. e., parallel with the axis.

13. CYLINDER AND CONOID WINDING, AXIALLY, ARMATURES. Winding armatures for electric machines in which the winding material is wound in a plane at right angles to the diameter of the armature.

14. FORMS AND FRAMES. Limited to devices on or by which material, generally wire, is wound to produce a coil of predetermined form or shape other than circular, comprising mostly formers for winding armature coils.

Search Classes—

242—WINDING AND REELING, subclasses 50, Cordage, Cards, boards, and forms, for winding cordage on forms, and 61, Reeling and unreeling, Fabrics, Cards, boards, and forms, for winding webs or fabrics on forms.

153—METAL-BENDING, appropriate subclasses—for example, 21, Angular, Reciprocating bender—for shaping armature coils by bending; also 64.5, Coiling, Flat wire, Edge winding, for all edge-winding devices.

15. FORMS AND FRAMES, REVOLUBLE. Forms or frames that are adapted to be rotated for winding the material to shape or in combination with the devices or machines for rotating them.

CLASS 242—Continued.

CLASS 242—Continued.

16. **SPOOLERS.** Machines for winding cordage material, as thread, upon spools or holders having flaring heads, the thread traverse varying in the different layers. This subclass is limited to winding a single spool.
17. **SPOOLERS, MULTIPLE.** Spoolers for winding a plurality of spools.
18. **BOBBIN AND COP WINDING.** Inventions not otherwise classifiable for winding cordage material—such as thread, twine, cord, rope, etc.—upon a suitable core or holder of the bobbin type—that is, holders of circular cross-section, cylindrical or cone-shaped and with or without flanges or disk-shaped heads, including, therefore, bobbins, cop tubes, pirns, jack-spools, quills, or like structures. The traverse of the thread is substantially of the same length.
- Search Classes—**
 242—WINDING AND REELING, subclasses 2, Ball or mass winding, for winding features, and 55, Reeling and unreeling, Fabrics, and the subclasses thereunder, for winding or reeling webs or fabrics.
 28—CORDAGE, subclass 7, Finishing yarn and thread, and subclass 14, Warping, for winding material on warping beams or rolls where a sheet of or a plurality of strands, yarn, etc., are simultaneously wound side by side on the same beam.
 117—SILK, particularly subclasses 4, Doubling; 7, Throwing, and 8, Winding, and 118, SPINNING, particularly subclasses 1, Bobbin and cop builders; 6, Doubling, and 12, Stopping, for winding silk, thread, or the like on bobbins or other holders where the strands are twisted together in a winding operation.
19. **BOBBIN AND COP WINDING, CUTTING DEVICES.** Cutting devices adapted to or in combination with bobbin and cop winding.
- Search Classes—**
 242—WINDING AND REELING, subclasses 21, Bobbin and cop winding, Sewing-machine shuttles, Cutting devices; 43, Cordage, Cutting devices; 56, Reeling and unreeling, Fabrics, Cutting devices; 135, Spool-holders, Thread-cutters, and 142, Twine-holders, Cutters, for cutting features or details.
 30—CUTLERY, subclass 14, Twine-cutters, for thread-cutters of general application.
 118—SPINNING, subclass 12, Stopping.
 140—WIRE-WORKING, subclass 141, Wire-cutting, and the subclasses thereunder, for wire-cutting devices.
20. **BOBBIN AND COP WINDING, SEWING-MACHINE SHUTTLES.** Devices not otherwise classifiable adapted for winding the type of bobbins employed in sewing-machine shuttles and designed for use upon or in connection with sewing-machines.
21. **BOBBIN AND COP WINDING, SEWING-MACHINE SHUTTLES, CUTTING DEVICES.** Sewing-machine shuttle winders provided with thread-cutters.
22. **BOBBIN AND COP WINDING, SEWING-MACHINE SHUTTLES, STOPS.** Sewing-machine shuttle winders provided with stop-motion devices.
- Search Classes—**
 242—WINDING AND REELING, subclasses 23, Bobbin and cop winding, Cone wind, Detectors and stops, and the subclasses thereunder, 36, Bobbin and cop winding, Detectors and stops, and the subclasses thereunder, and 49, Cordage, Detectors and stops.
 19—CARDING, subclass 25, Stopping.
 28—CORDAGE, subclass 31, Warping stop-motions.
 66—KNITTING AND NETTING, subclass 7, Stopping.
 118—SPINNING, subclass 12, Stopping.
 139—WEAVING, subclass 52, Stopping.
 140—WIRE-WORKING, subclass 126, Wire-feeding, Automatic stops.
23. **BOBBIN AND COP WINDING, SEWING-MACHINE SHUTTLES, DISK TYPE.** Sewing machine shuttle winders for winding very short or disk-shaped bobbins.
24. **BOBBIN AND COP WINDING, SEWING-MACHINE SHUTTLES, THREAD PRESSERS AND PADS.** Sewing-machine shuttle thread-winding devices having means in the form of a pad, roll, plate, or other presser for compacting or shaping the thread upon the bobbin.
- Search Class—**
 242—WINDING AND REELING, subclass 34, Bobbin and cop winding, Cone wind, Pressers and shapers.
25. **BOBBIN AND COP WINDING, WIRE.** Winding wire on a bobbin type of holder for storage purposes or for a commercial article.
- Search Class—**
 242—WINDING AND REELING, subclass 9, Cylinder and conoid winding, Magnets and coils, for machines or devices for winding magnets, magnet spools, or coils.
26. **BOBBIN AND COP WINDING, SYMMETRICAL LAYERS.** Winding bobbins of the universal or Fiji type—all machines, therefore, having means for imparting an incremental or rotary movement to the cop or ball at the end of each thread traverse movement or sufficient delay in the traverse movement of the thread guide so that the coils of one layer shall be laid just outside and parallel with the corresponding coils of the layer last wound, crossing the same and binding the coils and the loop at the ends firmly down, thus preventing the cop from breaking down and making it self-supporting. In the product the layers are symmetrical, each having the same number of coils and each coil being outside of rather than on top of the corresponding coil below it or in the last layer.

Search Class—

242—WINDING AND REELING, subclasses 2, Ball or mass winding; 31, Bobbin and cop winding, Cone wind, Quick traverse, and 43, Bobbin and cop winding, Quick traverse, for criss-cross winding features.

27. **BOBBIN AND COP WINDING, CONE WIND.** Winding thread, yarn, etc., in conical layers, and thereby gradually building up a cop, ball, or mass of thread or yarn upon a suitable cop tube, shell, or spindle or other core or holder; also devices which wind both cylindrical and conical layers. Winding devices to be classifiable under "Cone wind" must have mechanism for producing a relative longitudinal progressive movement between the cop or thread mass and the thread traverse guide.

Search Class—

118—SPINNING, particularly subclass 1, Bobbin and cop builders, and other appropriate subclasses, for cop-building features.

28. **BOBBIN AND COP WINDING, CONE WIND, DETECTORS AND STOPS.** Detectors and stops for cone-winding devices comprise (1) mechanism for detecting imperfections in the thread or undue tension thereof in winding; (2) mechanism for stopping the machine upon such detection or tension; (3) stop mechanism operating upon stoppage, breakage, exhaustion, etc., of the thread or for indicating such failure in the thread supply, and (4) stop mechanism operating when the winding is completed. This subclass contains only detectors or stop motions of the first two groups, not otherwise classifiable.

Search Classes—

242—WINDING AND REELING, subclasses 36, Bobbin and cop winding, Detectors and stops, and the subclasses thereunder, and 49, Cordage, Detectors and stops, for similar devices in bobbin or cordage winding.

19—CARDING, subclass 25, Stopping.

28—CORDAGE, subclass 31, Warping stop-motions.

66—KNITTING AND NETTING, subclass 7, Stopping.

118—SPINNING, subclass 12, Stopping.

139—WEAVING, subclass 52, Stopping.

140—WIRE-WORKING, subclass 126, Wire-feeding, Automatic stop.

29. **BOBBIN AND COP WINDING, CONE WIND, DETECTORS AND STOPS, THREAD BREAK OR EXHAUST.** Devices for stopping the cone-winding of the thread governed by and operating upon breakage, undue tension, stoppage or exhaustion of the thread supply.

30. **BOBBIN AND COP WINDING, CONE WIND, DETECTORS AND STOPS, LOAD.** Devices for automatically stopping the winding of the cop or cone mass when fully wound or when a predetermined amount has been wound.

31. **BOBBIN AND COP WINDING, CONE WIND, QUICK TRAVERSE.** Devices for winding crossed spiral coils by a quick traverse movement of the thread guide or of the core upon which the cop is wound.

Search Class—

242—WINDING AND REELING, subclass 26, Bobbin and cop winding, Symmetrical layers, for bobbin winders producing a fixed number of coils per layer; subclasses 43, Bobbin and cop winding, Quick traverse, for traversing mechanism, and 153, Guides, Traverse mechanism, for traversing mechanism *per se*.

32. **BOBBIN AND COP WINDING, CONE WIND, MULTIPLE.** Devices for cone-winding a plurality of cops or bobbins.

Search Classes—

242—WINDING AND REELING, subclass 44, Bobbin and cop winding, Multiple, for multiple winding features.

33. **BOBBIN AND COP WINDING, CONE WIND, FLIER TYPE.** Cone-winding devices having a rotary thread guide or flier for laying or winding a single thread.

Search Classes—

242—WINDING AND REELING, subclasses 2, Ball or mass winding, for fliers in ball-winding, and 128, Unwinding devices, for fliers rotated by the thread in unwinding.

118—SPINNING, suggestive subclasses, particularly 6, Doubling, where fliers similar in structure operate to twist several threads together into one and wind it on the top.

34. **BOBBIN AND COP WINDING, CONE WIND, PRESSERS AND SHAPERS.** Devices usually provided with cones or rollers for pressing and shaping the thread on or about the cone as it is wound.

35. **BOBBIN AND COP WINDING, CONE WIND, SPINDLES AND APPURTENANCES.** Spindles, mounting thereof, driving, and other features pertaining thereto, adapted for use in cone-winding machines and not classifiable in spinning.

Search Classes—

82—TURNING, subclass 30, Lathes, Head-stocks, Spindles and bearings.

118—SPINNING, subclasses 24, Spindle-driving devices; 25, Spindles and bearings, and the subclasses thereunder, and 27, Spindles and appurtenances.

139—WEAVING, subclass 89, Shuttles, Spindles and tips.

36. **BOBBIN AND COP WINDING, DETECTORS AND STOPS.** This subclass is miscellaneous and includes only those bobbin-winding devices not otherwise classifiable which detect the presence of knots, slubs, splits, accumulations of gum, lint, waste, or other imperfections or inequalities in the thread being wound or undue tension thereof.

CLASS 242—Continued.

Search Classes—

242—WINDING AND REELING, the definition and search-card data under subclass 28, Bobbin and cop winding, Cone wind, Detectors and stops.

19—CARDING, subclass 25, Stopping, for stop motions adapted to sliver coils.

37. BOBBIN AND COP WINDING, DETECTORS AND STOPS, THREAD BREAK OR EXHAUST. Devices for stopping the winding upon the breakage or exhaustion of thread or for indicating such failure in the thread supply.

Search Class—

242—WINDING AND REELING, subclass 29, Bobbin and cop winding, Cone wind, Detectors and stops, Thread break or exhaust, for similar devices for cone winders.

38. BOBBIN AND COP WINDING, DETECTORS AND STOPS, THREAD BREAK OR EXHAUST, DOUBLING-MACHINES. Detectors and stops controlled by the breaking or exhaustion of the thread for machines operating to wind a plurality of threads upon a single bobbin by ordinary winding methods, there being no twisting of the threads together, as in spinning machines.

Search Class—

118—SPINNING, subclasses 6, Doubling, and 12, Stopping, for stop motions of spinning doublers.

39. BOBBIN AND COP WINDING, DETECTORS AND STOPS, LOAD. Stop devices for arresting the winding when the bobbin is fully wound or loaded.

Search Class—

242—WINDING AND REELING, subclass 30, Bobbin and cop winding, Cone wind, Detectors and stops, Load, for similar devices employed in cone-winding.

40. BOBBIN AND COP WINDING, DETECTORS AND STOPS, LOAD, DOUBLING-MACHINES. Load-stop devices adapted to machines for winding a plurality of threads upon a single bobbin, but without twisting them.

41. BOBBIN AND COP WINDING, EJECTORS. Bobbin-winding machines having automatic devices for ejecting the bobbin when wound.

Search Classes—

19—CARDING, subclass 16, Balling heads.

139—WEAVING, subclasses 52, Stopping, particularly 54, Stopping, Weft stop-motions, and 85, Looms, Weft-replenishing.

42. BOBBIN AND COP WINDING, DOUBLING-MACHINES. Devices for winding a plurality of threads upon a single bobbin without the twisting characteristic of spinning machines.

Search Classes—

28—CORDAGE, subclass 14, Warping, for winding cordage strands in sheets.

118—SPINNING, subclass 6, Doubling, for spinning doublers.

43. BOBBIN AND COP WINDING, QUICK TRAVERSE. Bobbin-winding machines in which the thread layer or guide has a quick traverse movement relative and longitudinal to the bobbin or in which the bobbin is reciprocated relatively to the thread guide, so as to lay the thread on the bobbin in crossing spirals, producing a cross or criss-cross wind. In this subclass the number of convolutions, coils, or spirals varies somewhat in the different layers, usually decreasing in number toward the periphery.

Search Class—

242—WINDING AND REELING, subclass 26, Bobbin and cop winding, Symmetrical layers, for bobbin winders producing a fixed number of coils per layer. See also subclass 31, Bobbin and cop winding, Cone wind, Quick traverse.

44. BOBBIN AND COP WINDING, MULTIPLE. Machines adapted to wind a plurality of bobbins simultaneously.

Search Class—

242—WINDING AND REELING, subclasses 32, Bobbin and cop winding, Cone wind, Multiple, for multiple cone winders, and 17, Spoolers, Multiple, for multiple spoolers.

45. BOBBIN AND COP WINDING, TENSION DEVICES. Thread tensions adapted to bobbin or cone winders and not otherwise classifiable.

Search Class—

242—WINDING AND REELING, subclasses 75, Reeling and unreeling, Fabrics, Tension devices; 147, Tension devices, and the subclasses thereunder, for tension devices, and 132, Bobbin supporters and holders, Receptacle or trough, for tension devices combined with bobbin supporters.

46. BOBBIN AND COP WINDING, SPOOL AND BOBBIN LIFTERS. Devices, usually hand or foot operated, for lifting the spool or bobbin from winding relation with the operating mechanism, usually comprising a rotating drum, spindle or seat, which drives the spool by frictional contact.

47. CORDAGE. Devices for winding rope, cord, thread, yarn, or other strand material not otherwise classifiable and excluding wire-winding.

Search Classes—

242—WINDING AND REELING, subclasses 4, Ring-winding; 7, Cylinder and conoid winding; 25, Bobbin and cop winding, Wire; 54, Reeling and unreeling, and 78, Reeling and unreeling, Reels, Metal-working, and the subclasses thereunder, for wire-winding.

28—CORDAGE, subclasses 21, Cord and rope machines, for rope or cable making machines or devices operating to twist or lay up the strands into a rope or cord and wind it.

CLASS 242—Continued.

48. CORDAGE, CUTTING DEVICES. Cordage-winding apparatus provided with cutting devices and all cutters therefor, except those adapted for sheet or strip winding devices.

Search Class—

242—WINDING AND REELING, subclasses 19, Bobbin and cop winding, Cone wind, Cutting devices, for cutters associated with bobbin or cone winders, and 135, Spool-holders, Thread-cutters, and 142, Twine-holders, Cutters, for cutters associated with spool or twine holders.

49. CORDAGE, DETECTORS AND STOPS. Detector and stop devices not otherwise classifiable for cordage-winding machines.

Search Classes—

242—WINDING AND REELING, subclasses 22, Bobbin and cop winding, Sewing-machine shuttles, Stops; 28, Bobbin and cop winding, Cone wind, Detectors and stops, and 36, Bobbin and cop winding, Detectors and stops.

74—MACHINE ELEMENTS, subclass 46, Machine-brakes, Stop mechanisms, for stops *per se*.

140—WIRE-WORKING, subclass 126, Wire-feeding, Automatic stop.

50. CORDAGE, CARDS, BOARDS, AND FORMS. Winding cordage upon cards, boards, or other forms or cores, except those of the bobbin, spool, or reel type or forms and frames for winding armature coils or wire.

Search Class—

242—WINDING AND REELING, subclasses 61, Reeling and unreeling, Fabrics, Cards, boards, and forms, for sheet-winding, and 14, Forms and frames, and 15, Forms and frames, Revolvable, for winding wire upon forms or frames.

51. CORDAGE, HEDDLE AND SEINE NEEDLES. Winding heddle or seine needles.

52. CORDAGE, TATTING-SHUTTLES. Tatting-shuttle winders or winding.

53. CORDAGE, HANK AND SKEIN WINDING. Winding thread or yarn into hanks or skeins, but excluding devices that wrap or interlace the strands of the wound hank or skein to form a special package.

Search Classes—

242—WINDING AND REELING, subclass 127, Skein-holders, for devices for merely holding hanks and skeins and involving other than reel structures.

28—CORDAGE, subclass 9, Packaging braid and yarn, for special package making.

54. REELING AND UNREELING. Inventions not otherwise classifiable for winding material upon or unwinding it from reels, winding rolls, drums, and the like. Includes more particularly operating mechanisms for reels. Devices for winding wire and those of general application are classifiable in this subclass.

Search Classes—

242—WINDING AND REELING, subclasses 78, Reeling and unreeling, Reels, Metal-working, and the subclasses thereunder, for reels adapted to the metal-working arts, with or without their operating mechanisms, and 85, Reeling and unreeling, Reels, Carriers, for reels mounted upon portable carriers, with their operating mechanism.

39—FENCES, subclass 62, Fences, Wire, Stretchers, Windlasses; 57, HOISTING, and 103, PUMPS, subclass 35, Windlass water-elevator, for power winding devices, such as windlasses, capstans, stump-extractors, and the like.

55. REELING AND UNREELING, FABRICS. Winding paper, cloth, films, wire netting, fences, and in general fabric or sheet structure not otherwise classifiable.

Search Classes—

242—WINDING AND REELING, subclass 78, Reeling and unreeling, Reels, Metal-working, and the subclasses thereunder, for winding metal strips.

11—BOOKBINDING, subclass 22, Writing-tablets, Continuous; 40, CARD, PICTURE, AND SIGN EXHIBITING, subclasses 31, Changeable exhibitors, Motor-operated, Double reel and web; 36, Changeable exhibitors, Motor-operated, Shifters; 46, Changeable exhibitors, Obstacle-operated, Double reel and web; 82, Changeable exhibitors, Single reel and web; 86, Changeable exhibitors, Double reel and web, and 117, Calendars, Double reel and web, and 120, STATIONERY, subclass 30, Copy-holders, Movable copy, Roller-feed, for single or double reel web-winding devices.

66—KNITTING AND NETTING, subclass 9, Take-ups and tensions, for knitting and netting winders.

113—SHEET-METAL WARE, MAKING, subclasses 57, Seaming-machines, Compressing, Die, and 58, Seaming-Machines, Compressing, Roller.

165—CHAIRS, subclass 10, Rests, Head, for roll-holders for serving paper in sanitary head rests.

166—CURTAINS, SHADES, AND SCREENS, subclass 44, Awnings, Roll and reel, for roll-operating mechanism, winding boxes, and gearing.

189—METALLIC BUILDING STRUCTURES, subclass 57, Shutters, Roll, Operating devices.

197—TYPEWRITING-MACHINES, subclass 127, Paper-feeding, and appropriate subclasses thereunder, particularly subclass 133, Paper-feeding, Web, for paper rolls and their controlling devices, tensions, and guides.

211—STORE FURNITURE, subclass 29, Serving apparatus, and the subclasses thereunder, particularly subclasses 31, Serving apparatus, Roll-holders, and 32, Serving apparatus, Roll-holders, Cutting attachment.

Class 242—Continued.

56. REELING AND UNREELING, FABRICS, CUTTING DEVICES. Miscellaneous cutting devices not otherwise classifiable adapted for or in combination with fabric-winding devices.

Search Classes—

- 242—WINDING AND REELING, subclass 48, Cordage, Cutting devices, for cutting cordage or textile material not of sheet form.
73—MEASURING INSTRUMENTS, subclass 9, Cloth-measuring machines.
164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 65, Cutting, Machines, Rotary cutter, Slitters and winders, for devices which slit the sheet longitudinally and then wind it.
211—STORE FURNITURE, subclasses 12, Counters, Attachments, and 32, Serving apparatus, Roll-holders, Cutting attachment, for the combination of roll-holders and cutting devices.

57. REELING AND UNREELING, FABRICS, DETECTORS AND STOPS. Fabric-winding machines provided with detector or stop mechanisms.

Search Classes—

- 242—WINDING AND REELING, subclasses 28, Bobbin and cop winding, Cone wind, Detectors and stops; 36, Bobbin and cop winding, Detectors and stops, and 49, Cordage, Detectors and stops, for details applicable to cordage-winding.
74—MACHINE ELEMENTS, subclass 46, Machine-brakes, Stop mechanisms, for stop mechanism *per se*.
140—WIRE-WORKING, subclass 126, Wire-feeding, Automatic stop.

58. REELING AND UNREELING, FABRICS, WEB-ROLL SUPPLY. Supplying or renewing web-rolls or placing them in operative relation to a machine which utilizes the web; also devices for removing the rolls from a machine.

Search Class—

- 242—WINDING AND REELING, subclass 129, Coil-holders, for devices for conveying coils.

59. REELING AND UNREELING, FABRICS, LAPPED OR BUTTED LENGTHS. The winding of short lengths or sheets of fabric in which the adjacent ends are lapped or butted.

60. REELING AND UNREELING, FABRICS, BANDAGE-ROLLING. Devices for winding bandages, usually comprising a bracket or stand having means for clamping it to a table or support, and on which is mounted the reel roll or its equivalent, with suitable winding mechanism.

61. REELING AND UNREELING, FABRICS, CARDS, BOARDS, AND FORMS. Winding fabric upon a suitable core or form other than of circular cross-section or of reel form.

Search Classes—

- 242—WINDING AND REELING, subclass 50, Cordage, Cards, boards, and forms, for the similar winding of cordage.
73—MEASURING INSTRUMENTS, subclass 9, Cloth-measuring machines, for similar machines with measuring devices.
206—SPECIAL RECEPTACLES AND PACKAGES, subclass 50, Packages, Cloth bolts, boards, etc., for cards, boards, and forms *per se*.

62. REELING AND UNREELING, FABRICS, CLOTH. Devices specific to the winding of cloth by the inclusion of some elements—such as openers, spreaders, stretchers, spur-faced rollers, etc.—which would not be applicable to paper or other fabrics.

63. REELING AND UNREELING, FABRICS, AUTOMATICALLY CONTRACTING REEL. Fabric winders provided with mechanism for automatically contracting or expanding the reel during the winding operation and at present mostly employed in paper-making.

64. REELING AND UNREELING, FABRICS, REVOLUBLE REEL-CARRIERS. Revolvable supporting frames on which a plurality of reels or rolls are adapted to be mounted and revolved to an operative position. The axis on which the frame revolves is generally horizontal, but may be vertical.

65. REELING AND UNREELING, FABRICS, FRICTION-DRUM DRIVE. Fabric-winding devices provided with a rotary drum or equivalent to drive the fabric roll by frictional contact. Single drum devices are classifiable in this subclass.

Search Classes—

- 242—WINDING AND REELING, subclass 18, Bobbin and cop winding, and the subclasses thereunder, for details of drum-driving features in bobbin-winding.
28—CORDAGE, subclass 14, Warping, and 101, PRINTING, subclass 97, Paper-damping machines, Winders, for drum-driving features.

66. REELING AND UNREELING, FABRICS, FRICTION-DRUM DRIVE, MULTIPLE DRUM. Fabric-winding mechanism having a plurality of rotary drums each of which drives or rotates the fabric roll by frictional contact.

67. REELING AND UNREELING, FABRICS, BELT-REELS. Devices for winding up the belts employed in driving machines.

68. REELING AND UNREELING, FABRICS, CORES AND HOLDERS. Miscellaneous devices, such as rolls, drums, shells, sticks, reels, cores, or other fabric-roll holders, their mandrel or supporting devices, and other appurtenances not otherwise classifiable in the subclasses hereunder.

Class 242—Continued.

Search Classes—

- 242—WINDING AND REELING, subclass 130, Bobbin supporters and holders, for holders adapted to hold tubular shells on which thread masses are wound.
242—WINDING AND REELING, subclass 71, Reeling and unreeling, Fabrics, Cores and holders, Ribbon and film spools, Camera, and 95, PHOTOGRAPHY, subclasses 31, Cameras, Roll-holding, and subclasses thereunder, and 90.5, Fluid-treating apparatus, Dark cabinets, Roll-film, for roll-film holders.
242—WINDING AND REELING, subclass 61, Reeling and unreeling, Fabrics, Cards, boards, and forms.
11—BOOKBINDING, subclass 22, Writing-tablets, Continuous.
73—MEASURING INSTRUMENTS, subclass 9, Cloth-measuring machines.
93—PAPER MANUFACTURES, subclass 79, Tube-machines, Tapering wind, for machines employing tapering winding cores, holders, and web-fasteners.
112—SEWING-MACHINES, subclass 15, Revolving-hook machines.
118—SPINNING, subclass 31, Bobbin and spindle connectors.
120—STATIONERY, subclass 30, Copy-holders, Movable copy, Roller-feed.
156—CURTAINS, SHADES, AND SCREENS, subclass 29, Shade, Rollers, and the subclasses thereunder.
206—SPECIAL RECEPTACLES AND PACKAGES, subclass 50, Packages, Rolls and reels.
211—STORE FURNITURE, subclass 31, Serving apparatus, Roll-holders, for plugs.

69. REELING AND UNREELING, FABRICS, CORES AND HOLDERS, NOTE-SHEET ROLLS. Spool or bobbin structures, with or without holders therefor, adapted to hold a roll of sheet music for use in automatic musical instruments. The note sheet may be included.

Search Class—

- 84—MUSIC, subclasses 161, Automatic instruments, Details, Selectors, and 162, Automatic instruments, Details, Selectors, Note-sheets; also 166, Automatic instruments, Details, Selectors, Winding and rewinding, for winding and rewinding devices for these rolls and specific to automatic players.

70. REELING AND UNREELING, FABRICS, CORES AND HOLDERS, RIBBON AND FILM SPOOLS. Spools and bobbins for winding typewriter ribbons, kinetoscope films and the like, usually provided with web fastening or securing devices.

Search Classes—

- 242—WINDING AND REELING, subclass 74, Reeling and unreeling, Fabrics, Web-fasteners, and notes thereunder, for web-fasteners *per se*.
88—OPTICS, subclass 17, Motion picture apparatus, Picture-strip, for film-winding devices in combination with motion picture apparatus.
197—TYPEWRITING-MACHINES, subclass 151 *et seq.*, Ribbon mechanism, for typewriter-ribbon spools combined with typewriter mechanism.

71. REELING AND UNREELING, FABRICS, CORES AND HOLDERS, RIBBON AND FILM SPOOLS, CAMERA. Spools or bobbin structures adapted to hold a film-roll for use in photographic cameras.

Search Class—

- 95—PHOTOGRAPHY, subclass 31, Cameras Roll-holding, for combinations of spool and camera.

72. REELING AND UNREELING, FABRICS, CORES AND HOLDERS, CONTRACTILE. Winding cores for fabrics having means for varying the diameter either to expand it or to contract it, usually to contract it to permit removal of the roll of fabric.

Search Classes—

- 242—WINDING AND REELING, subclass 110, Reeling and unreeling, Reels, Contractile, and subclasses thereunder, for contractile reels for winding cordage.
10—BOLT, NAIL, NUT, RIVET, AND SCREW MAKING, subclass 145, Screw-threading, Tapping, Implements, Taps, Collapsible, Wedge-core.
22—METAL-FOUNDING, subclass 170, Cores, Metal, Contracting, and 173, Cores, Core-bars, Collapsible, for contractile cores employed in casting.
64—JOURNAL-BOXES, PULLEYS, AND SHAFING, subclass 8, Pulleys, Expandible, for similar devices employed for driving belts.
77—BORING AND DRILLING, subclass 76, Reamers, Adjustable, Wedge, Central cone.
82—TURNING, subclass 44, Work-drivers, Mandrels, Expandible.
85—DRIVEN, HEADED, AND SCREW-THREADED FASTENINGS, subclass 2.4, Bolts, Expanding-sleeve, and 2.8, Bolts, Expanding-sleeve, Double wedge.
113—SHEET-METAL WARE, MAKING, subclass 103, Soldering, Clamps, Expanding mandrel.
144—WOODWORKING, subclass 268, Wood-bending, Former, Pivotal, Colling.
153—METAL-BENDING, subclasses 80, Pipe expanders and flangers, Non-traveling, Segmental expander, and 81, Pipe expanders and flangers, Traveling, Rotary.

73. REELING AND UNREELING, FABRICS, CORES AND HOLDERS, CONTRACTILE, LENGTHWISE. Winding cores and holders that permit varying the length to adapt them to fabrics of different widths.

Search Class—

- 242—WINDING AND REELING, subclass 70, Reeling and unreeling, Fabrics, Cores and holders, Ribbon and film spools.

CLASS 242—Continued.

74. REELING AND UNREELING, FABRICS, WEB-FASTENERS. Devices for securing the web to the core or holder on which it is wound.

Search Classes—

- 242—WINDING AND REELING, subclass 70, Reeling and unreeling, Fabrics, Cores and holders, Ribbon and film spools; also subclass 125, Bobbins and spools, Thread fasteners and guides, for devices for securing or fastening cordage ends to a bobbin or spool.
- 84—MUSIC, subclass 162, Automatic instruments, Details, Selectors, Note-sheets, for devices for fastening note sheets to rollers.
- 120—STATIONERY, subclass 30, Copy-holders, Movable copy, Roller-feed.
- 144—WOODWORKING, subclass 268, Wood-bending, Former, Pivotal, Coiling.
- 156—CURTAINS, SHADES, AND SCREENS, subclass 29, Shade, Rollers.
- 197—TYPEWRITING-MACHINES, subclass 151 *et seq.*, Ribbon mechanism.
- 206—SPECIAL RECEPTACLES AND PACKAGES, subclass 51, Packages, Ribbons, braids, and trimmings; subclasses 53, Packages, Ribbons, braids, and trimmings, Rolls or spools, Clamps, and 54, Packages, Ribbons, braids, and trimmings, Rolls or spools, Clamps, Centrally attached, for peripheral clamps.
75. REELING AND UNREELING, FABRICS, TENSION DEVICES. Tension devices adapted to the winding of fabrics.
- Search Classes—
- 242—WINDING AND REELING, subclasses 45, Bobbin and cop winding, Tension devices, and the search-card data thereunder; 99, Reeling and unreeling, Reels, Carriers, Brakes, and 147, Tension devices, and the subclasses thereunder, for cordage-winding tension; subclass 60, Reeling and unreeling, Fabrics, Bandage-rolling.
- 223—APPAREL APPARATUS, subclass 3, Cloth-pilers, for tension devices applied to machines for piling or folding cloth, etc.
76. REELING AND UNREELING, FABRICS, GUARDS AND GUIDES. Devices for engaging the web or fabric to direct, guide, or protect it during the winding operation.
- Search Classes—
- 26—CLOTH-FINISHING, subclass 18, Guiding, for guiding devices for cloth.
- 139—WEAVING, subclass 56, Take-ups and let-offs, Beams, for warping beams or drums.
- 164—CUTTING AND PUNCHING SHEETS AND BARS, subclass 65, Cutting, Machines, Rotary cutter, Slitters and winders.
- 197—TYPEWRITING-MACHINES, subclass 151 *et seq.*, Ribbon mechanism.
77. REELING AND UNREELING, REELS. Miscellaneous reel structures for cordage, wire, and metal strips or flats not classifiable in the subclasses hereunder.
- Search Classes—
- 9—BOATS AND BUOYS, subclass 9, Buoys, Wreck-indicating, for reels employed in connection with buoys.
- 28—CORDAGE, subclass 14, Warping, for drum reels or bobbins employed as warping beams.
- 206—SPECIAL RECEPTACLES AND PACKAGES, subclass 59, Packages, Rolls and reels, for special packages or transportation reels.
- 227—FIRE-ESCAPES, subclass 34, Automatic speed-governors, Centrifugal, for cord drum and reel structure.
78. REELING AND UNREELING, REELS, METAL-WORKING. Reels or reeling machines for wire or metal strips and flats, adapted to the metal working or manufacturing arts, employed for the easy handling or manipulation of the product, primarily for storage or to facilitate unwinding from the coil.
- Search Class—
- 205—METAL-DRAWING, subclasses 16, Wire, and 20, Wire, Drawing-drums.
79. REELING AND UNREELING, REELS, METAL-WORKING, COIL-CONVEYING. Reels and holders for coils of wire in combination with devices for facilitating handling or conveying the reels, holders, or coils.
- Search Classes—
- 242—WINDING AND REELING, subclass 58, Reeling and unreeling, Fabrics, Web-roll supply.
- 57—HOISTING, subclass 112, Lifters, Spool, for handling implements.
80. REELING AND UNREELING, REELS, METAL-WORKING, MULTIPLE. Reeling devices comprising a plurality of reels or coil-holders.
81. REELING AND UNREELING, REELS, METAL-WORKING, COIL-STRIPPING. Reeling devices provided with means for positively removing, ejecting, or stripping off the wound coil from the reel or for releasing it to let it fall by gravity.
- Search Class—
- 242—WINDING AND REELING, appropriate subclasses—for example, 84, Reeling and unreeling, Reels, Metal-working, Retractable arm—for reels which simply permit the removal of the wound coil.
82. REELING AND UNREELING, REELS, METAL-WORKING, REVOLUBLE COILER. Reeling devices having a revolving or gyrating guide for feeding or laying the wire upon or around the reel or holder.
- Search Classes—
- 19—CARDING, subclass 5, Coilers, for revoluble sliver coilers.
- 29—METAL-WORKING, subclass 81, Scale removers and preventers.

CLASS 242—Continued.

83. REELING AND UNREELING, REELS, METAL-WORKING, RECEPTACLE. Reeling devices having an open or closed receptacle within which the coil is laid. May include a disk having concentric rows of pegs or equivalent.

Search Classes—

- 242—WINDING AND REELING, subclass 81, Reeling and unreeling, Reels, Metal-working, Coil-stripping, for receptacle reels having coil-stripping means.
- 19—CARDING, subclass 5, Coiling, for sliver coilers of this type.
84. REELING AND UNREELING, REELS, METAL-WORKING, RETRACTILE ARM. Reeling devices in which the reel structure has one or more arms for engaging the coil that may be retracted or so moved as to permit the coil to be removed.
- Search Class—
- 242—WINDING AND REELING, subclass 110, Reeling and unreeling, Reels, Contractile, for reels of adjustable diameter.
85. REELING AND UNREELING, REELS, CARRIERS. Miscellaneous reels in combination with their supporting frames, holders, stands, etc., generally portable in character and not otherwise classifiable.
- Search Classes—
- 57—HOISTING, subclasses 19, Stump-extractors, and 84, Capstans and windlasses, Hand-crank operated.
- 103—PUMPS, subclass 35, Windlass water-elevator.
- 206—SPECIAL RECEPTACLES AND PACKAGES, subclass 58, Packages, Dispensing, Paper-rolls.
86. REELING AND UNREELING, REELS, CARRIERS, HOSE. Hose-reel carriers, hose-trundlers, and hose-reels not otherwise classifiable.
- Search Class—
- 137—WATER DISTRIBUTION, subclass 31, Water-supply hose-holders, for hose-reels having features specific to water supply or distribution.
87. REELING AND UNREELING, REELS, CARRIERS, HOSE, WHEELED. Wheeled carriers for hose-reels, lawn or garden reels, hose-carts, etc.
- Search Classes—
- 242—WINDING AND REELING, subclass 86, Reeling and unreeling, Reels, Carriers, Hose, for hose-trundlers.
- 21—CARRIAGES AND WAGONS, subclass 28, Hose-carriages, for structures specific to vehicles.
88. REELING AND UNREELING, REELS, CARRIERS, HOSE, WHEELED, AUTOMATIC WINDERS. Automatically operated hose-reels mounted on supporting wheels and hose carts and carriages adapted to rotate the reel through connection with the wheels thereof or operated by spring drum or equivalent.
89. REELING AND UNREELING, REELS, CARRIERS, HOSE, LOOP-ATTACHED. Hose-reel structures having means for attaching a bight or loop of the hose between its ends to the reel, so that both end portions may be wound or unwound simultaneously.
90. REELING AND UNREELING, REELS, CARRIERS, WHEELED. Reel carriers provided with one or more wheels and reel carriers mounted upon a vehicle.
- Search Classes—
- 57—HOISTING, subclass 86, Capstans and windlasses, Steam-winch, for wheeled steam-winch.
- 111—SEEDERS AND PLANTERS, subclass 5, Check-row, and subclasses thereunder, for combinations of reels and planters specific to planters.
91. REELING AND UNREELING, REELS, CARRIERS, WHEELED, AUTOMATIC WINDERS. Wheeled carriers in which the reel is automatically rotated by the movement of the carrier.
92. REELING AND UNREELING, REELS, CARRIERS, WHEELED, AUTOMATIC WINDERS, GUIDES. Wheeled automatic winders having a guide for directing or laying upon the reel the wire, rope, or other material being wound.
- Search Class—
- 242—WINDING AND REELING, subclasses 93, Reeling and unreeling, Reels, Carriers, Wheeled, Guides, for guiding devices; 157, Guides, for guides of general application, and 153, Guides, Traverse mechanism, for traversing guides.
93. REELING AND UNREELING, REELS, CARRIERS, WHEELED, GUIDES. Wheeled reel-carriers having guiding devices for the material wound, but excluding automatic wheeled winders.
- Search Class—
- 242—WINDING AND REELING, subclass 92, Reeling and unreeling, Reels, Carriers, Wheeled, Automatic winders, Guides, and search-card data thereunder.
94. REELING AND UNREELING, REELS, CARRIERS, TRUNDLE-REELS. Reel-carriers in which the reel itself or the coil forms the trundle or ground roller, which by movement over the ground winds or unwinds the material.
- Search Classes—
- 41—ORNAMENTATION, subclass 3, Apparatus and appliances, Metallic-leaf applying, Magazine hand-tools, for trundlers for applying leaf.
- 57—HOISTING, subclass 2, Barrel-rollers, for carrier construction.
- 120—STATIONERY, subclass 27, Blotters, Supports.

CLASS 242—Continued.

95. REELING AND UNREELING, REELS, CARRIERS, WHEEL-ATTACHED. Reel-carriers adapted to be attached to the side of a vehicle wheel to revolve therewith.
96. REELING AND UNREELING, REELS, CARRIERS, HAND OR BODY. Reel-carriers or reels adapted to be supported either by the hand or the body in reeling or unreeling and not otherwise classifiable.

Search Classes—

- 39—FENCES, subclass 122, Fences, Wire, Stretchers, Mid-wire take-ups, Journaled.
- 57—HOISTING, subclass 112, Lifters, Spool.
- 73—MEASURING INSTRUMENTS, subclass 49, Measures, Tape.

97. REELING AND UNREELING, REELS, CARRIERS, HAND OR BODY, CASING. Hand or body supported reels provided with a casing or protective shield.

Search Class—

- 242—WINDING AND REELING, subclass 101, Reeling and unreeling, Reels, Clothes-line type, Casing, for housing and casing features.

98. REELING AND UNREELING, REELS, CARRIERS, HAND OR BODY, SPRING-DRUM ARTICLE-HOLDERS. Spring-drum reels provided with a strap, chain, cord, or equivalent wound thereon, which is adapted to be connected with or attached to the article supported, usually some article for personal use or wear. These devices may include the pin for attaching the holders to the person.

99. REELING AND UNREELING, REELS, CARRIERS, BRAKES. Reel-carriers having some form of braking device operating upon the reel to control the unwinding or to supply tension in winding.

Search Classes—

- 242—WINDING AND REELING, subclass 156, Tension devices, Brakes, for tension brakes of more general application to winding devices.
- 56—HARVESTERS, subclass 86, Self-binders, Tension and take-up devices, for spool brakes.
- 74—MACHINE ELEMENTS, subclass 13, Machine-brakes, for brakes *per se*.

100. REELING AND UNREELING, REELS, CLOTHES-LINE TYPE. Reels and their supporting frames, brackets, housings, or casings, etc., with or without operating devices—such as hand cranks or other motors and gearing—and adapted for winding clothes-lines, awning-cords, etc., and not otherwise classifiable.

Search Classes—

- 242—WINDING AND REELING, subclass 96, Reeling and unreeling, Reels, Carriers, Hand or body, for clothes-line reels and structures adapted to be held in the hand or supported by the body.
- 68—LAUNDRY, subclass 3, Clothes-lines, for the combination of these reel structures with clothes-lines and also for supporting posts, pulleys, or stretchers; subclass 14, Clothes-line reels, for the combination of reels with casings forming receptacles for clothes line pins or other features not of general application but specific to laundry.
- 156—CURTAINS, SHADES, AND SCREENS, subclass 44, Awnings, Roll and reel, for roll-operating mechanism, winding boxes, gearing, etc.

101. REELING AND UNREELING, REELS, CLOTHES-LINE TYPE, CASING. Clothes-line type reels provided with casings, housings, or similar protective features.

Search Class—

- 242—WINDING AND REELING, subclass 97, Reeling and unreeling, Reels, Carriers, Hand or body, Casing, for housing features or details.

102. REELING AND UNREELING, REELS, CLOTHES-LINE TYPE, SPRING-DRUM. (Clothes-line reel structures having coil-spring winding mechanism.)

Search Class—

- 242—WINDING AND REELING, subclass 107, Reeling and unreeling, Reels, Spring-drum type, and subclasses thereunder.

103. REELING AND UNREELING, REELS, NAILING AND STAPLING. Reels adapted for nailing and stapling machines.

104. REELING AND UNREELING, REELS, LINE-DRIERS. Reeling devices of the skeleton type on which the material is wound for drying, more particularly for fishing-line driers, and which include more than drying reels *per se*.

Search Class—

- 34—DRIERS, subclass 29, Reels, Winding.

105. REELING AND UNREELING, REELS, BOX-STRAP. Reels peculiarly adapted for holding box-straps, comprising means to permit the ready insertion of a second roll or coil as the first is used up.

Search Classes—

- 73—MEASURING INSTRUMENTS, subclass 49, Measures, Tape, for similar structures.
- 206—SPECIAL RECEPTACLES AND PACKAGES, subclasses 52, Packages, Ribbons, braids, and trimmings, Rolls or spools, Inclosed; 70, Packages, Watch-springs, and 71, Packages, Metallic leaf.

106. REELING AND UNREELING, REELS, BRACKET-SUPPORTED. Reels provided with bracket supports adapted to be secured to a machine, table, stand, or other support.

CLASS 242—Continued.

Search Classes—

- 242—WINDING AND REELING, subclasses 60, Reeling and unreeling, Fabrics, Bandage-rolling, and 100, Reeling and unreeling, Reels, Clothes-line type; subclasses 111, Reeling and unreeling, Reels, Contractile, Pivoted arm, and 113, Reeling and unreeling, Reels, Contractile, Slidable arm, for bracket and stand clamps, and 130, Bobbin supporters and holders, for use with bobbin supporters.
- 197—TYPEWRITING-MACHINES, subclass 151 *et seq.*, Ribbon mechanism.

107. REELING AND UNREELING, REELS, SPRING-DRUM TYPE. Miscellaneous reel structures in which the reel or core is rotated through the instrumentality of a coil spring and may include the supporting cord or strap and attached article.

Search Classes—

- 2—APPAREL, subclass 186, Head-coverings, Hats, Hangers, for spring-drum reels attached to hats.
- 73—MEASURING INSTRUMENTS, subclass 49, Measures, Tape.

108. REELING AND UNREELING, REELS, SPRING-DRUM TYPE, GEARING. Spring-drum winders provided with gearing.

109. REELING AND UNREELING, REELS, SPRING-DRUM TYPE, VERTICAL. Spring-drum reels mounted to rotate in a vertical plane.

Search Classes—

- 11—BOOKBINDING, subclass 22, Writing-tablets, Continuous.
- 16—BUILDERS' HARDWARE, subclasses 97, Door-springs, Strap and pulley attachments, and 148, Sash-balances, Spring, Drum and cord, for spring-drum and cord or strap devices adapted for use as sash-balances or door-springs.
- 40—CARD, PICTURE, AND SIGN EXHIBITING, subclasses 46, Changeable exhibitors, Obstacle-operated, Double reel and web; 82, Changeable exhibitors, Single reel and web, and 86, Changeable exhibitors, Double reel and web, and 120, STATIONERY, subclass 29, Copy-holders, Movable copy, for single and double reel and web devices provided with winding springs.
- 43—FISHING AND TRAPPING, subclass 33, Fishing, Reels, Spring-operated, for fish-pole reels operated by coil springs.
- 137—WATER DISTRIBUTION, subclass 105, Mains and pipes, Hose, Take-up.
- 156—CURTAINS, SHADES, AND SCREENS, subclass 36, Shade, Rollers, Spring.
- 173—ELECTRICITY, CONDUCTORS, subclass 367, Conductors, Take-up.
- 179—TELEPHONY, subclass 155, Supports, Suspension, Reels.
- 185—MOTORS, subclasses 9, Composite, Spring, *et seq.*, and 37, Spring, *et seq.*, for spring-drums employed in motors.
- 191—ELECTRICITY, ELECTRIC RAILWAYS, subclasses 35, Systems, Current-distribution, Overhead, Trolleys, Catchers, and 36, Systems, Current-distribution, Overhead, Trolleys, Catchers, Drop, and 248, SUPPORTS, subclasses 9, Adjustable, Vertical, Spring, and 10, Adjustable, Vertical, Spring, Electric, for spring-drum winders and retractors.
- 211—STORE FURNITURE, subclass 31, Serving apparatus, Roll-holders.
- 227—FIRE-ESCAPES, subclasses 1, Automatic speed-governors; 2, Automatic speed-governors, Escapement-check, and 34, Automatic speed-governors, Centrifugal.
- 240—ILLUMINATION, subclasses 77, Light-supports, Chandeliers, Combined, and particularly 71, Light-supports, Vertically-adjustable, Spring-drum.

110. REELING AND UNREELING, REELS, CONTRACTILE. Miscellaneous cordage reels of the contractile or expandible type the diameter of which may be varied and not otherwise classifiable.

Search Classes—

- 242—WINDING AND REELING, subclasses 72, Reeling and unreeling, Fabrics, Cores and holders, Contractile, for reels of the contractile drum or mandrel type for winding web structures or fabrics and 115, Reeling and unreeling, Reels, Knockdown or collapsible, for collapsible reels.
- 64—JOURNAL-BOXES, PULLEYS, AND SHAFTING, subclass 8, Pulleys, Expandible, for similar structures for pulleys.
- 82—TURNING, subclass 44, Work-drivers, Mandrels, Expandible.
- 77—BORING AND DRILLING, subclass 76, Reamers, Adjustable, Wedge, Central cone.

111. REELING AND UNREELING, REELS, CONTRACTILE, PIVOTED ARM. Contractile reels having one or more arms, usually pivoted to swing in a plane at right angles to the axis, or several arms pivoted at one end, that by adjustment vary the diameter of the reel.

Search Class—

- 242—WINDING AND REELING, subclass 110, Reeling and unreeling, Reels, Contractile, for reels having pivoted radial arms at opposite ends, connected at their outer portions to form parallelograms, and which may be swung in or out to vary the radial distance of the connecting arm or member.

112. REELING AND UNREELING, REELS, CONTRACTILE, PIVOTED ARM, LAZY-TONGS TYPE. Contractile reels which are contracted or expanded by the lazy-tong action of pivoted arms.

113. REELING AND UNREELING, REELS, CONTRACTILE, SLIDABLE ARM. Contractile reels having one or more radially adjustable arms or spokes that by adjustment toward or from the axis of the reel decrease or increase its diameter.

CLASS 242—Continued.

114. REELING AND UNREELING, REELS, CONTRACTILE, SLIDABLE ARM, AUXILIARY. Reels having one or more short arms, pins, or brackets extending parallel with the axis of the reel and mounted for adjustment toward or from said axis upon a reel head, disk, or radially extending arm.

115. REELING AND UNREELING, REELS, KNOCKDOWN OR COLLAPSIBLE. Reel structures comprising parts or sections that can be easily taken apart, separated, or collapsed for the removal of the coil or for shipping or storing.

Search Classes—

- 242—WINDING AND REELING, subclasses 70, Reeling and unreeling, Fabrics, Cores and holders, Ribbon and film spools; 111, Reeling and unreeling, Reels, Contractile, Pivoted arm, and 113, Reeling and unreeling, Reels, Contractile, Slidable arm.
22—METAL-FOUNDING, subclass 173, Cores, Core-bars, Collapsible, for collapsible cores.

116. REELING AND UNREELING, REELS, SEPARABLE DISKS OR HEADS. Reel structures of sheave or pulley type having longitudinally separable heads or disks which when separated permit removal of the coil and characterized by the absence of a connecting drum or spindle, thus forming a sort of split pulley.

Search Class—

- 242—WINDING AND REELING, subclass 103, Reeling and unreeling, Reels, Nailing and stapling.

117. WINDING-DRUMS AND SAND-REELS. Winding drums *per se* or sand reels, but not the operating mechanism or carriers therefor.

Search Classes—

- 57—HOISTING, subclass 22, Capstans and windlasses, and the subclasses thereunder, for operating mechanism or carriers for winding drums and sand reels.
74—MACHINE ELEMENTS, subclass 26, Gearing, Frictional, for details of sand-reel structures.
166—ARTESIAN AND OIL WELLS, subclass 3, Drilling and boring, for sand reels combined with clutches, friction pulleys, etc.
205—METAL-DRAWING, subclasses 16, Wire, and 20, Wire, Drawing-drums.

118. BOBBINS AND SPOOLS. Miscellaneous bobbins, cop tubes, or other cores upon which silk, thread, cord, twine, wire, or other cordage may be wound.

Search Classes—

- 28—CORDAGE, subclass 14, Warping, for large bobbins employed as warping beams.
112—SEWING-MACHINES, subclass 23, Shuttles and bobbins, for the type of bobbins adapted for use in shuttles, as by the provision of projecting studs or the equivalent.
206—SPECIAL RECEPTACLES AND PACKAGES, particularly subclasses 51, Packages, Ribbons, braids, and trimmings; 52, Packages, Ribbons, braids, and trimmings, Inclosed, and 59, Packages, Rolls and reels, for the combination of a bobbin type of holder with material other than cordage wound thereon.

119. BOBBINS AND SPOOLS, PAPER, PULP, OR LEATHER. Bobbins and spools having heads or spindles of paper, leather, pulp, plastic material, or the like.

120. BOBBINS AND SPOOLS, COP TYPE. Winding cores comprising a single disk-head, a tubular stem having a flange or head, a cop tube, shell, or the like adapted to be supported on a spindle or other holder and on which cops or masses of threads are generally wound in conical layers. The cop-type subclasses include all winding cores for cordage of general utility that do not have a plurality of heads or flanges.

Note.—Cop-type bobbins of specific adaptability to particular types of machines are classifiable with such machines.

121. BOBBINS AND SPOOLS, COP TYPE, METAL. Cop-type bobbins having heads or stems of metal.

Search Class—

- 242—WINDING AND REELING, subclass 123, Bobbins and spools, Metal heads.

122. BOBBINS AND SPOOLS, COP TYPE, PAPER, PULP, OR LEATHER. Includes cop types of winding cores having a head or stem of leather, pulp, plastic material, or the like.

Search Class—

- 242—WINDING AND REELING, subclass 119, Bobbins and spools, Paper, pulp, or leather.

123. BOBBINS AND SPOOLS, METAL HEADS. Bobbins or spools having metal heads.

124. BOBBINS AND SPOOLS, REMOVABLE HEADS. Bobbins or spools have one or more removable heads.

Search Class—

- 242—WINDING AND REELING, subclasses 70, Reeling and unreeling, Fabrics, Cores and holders, Ribbon and film spools, and 115, Reeling and unreeling, Reels, Knockdown or collapsible.

125. BOBBINS AND SPOOLS, THREAD FASTENERS AND GUIDES. Bobbins or spools provided with devices for holding or securing the end of the thread or for guiding it during unwinding and not otherwise classifiable.

Search Classes—

- 242—WINDING AND REELING, subclass 74, Reeling and unreeling, Fabrics, Web-fasteners, for devices adapted to hold the inner ends of webs to winding cores, drums, or reels.
206—SPECIAL RECEPTACLES AND PACKAGES, subclass 59, Packages, Rolls and reels.

CLASS 242—Continued.

126. BOBBINS AND SPOOLS, THREAD FASTENERS AND GUIDES, SEPARABLE. Separable or attachable devices for holding the loose end of the thread, usually a spring band, clasp, or analogous device adapted to embrace the spool or to be inserted in its spindle opening and provided with or forming a thread-holder. May constitute spool tensions in unwinding the thread.

Search Classes—

- 30—CUTLERY, subclass 14, Twine-cutters, for thread-cutters *per se* adapted to be driven into, attached to, or removably supported by the spool, many of which are also holders for the end of the thread.

- 139—WEAVING, subclass 56, Take-ups and let-offs, Beams, for warp beams or drums.

- 206—SPECIAL RECEPTACLES AND PACKAGES, subclass 53, Packages, Ribbons, braids, and trimmings, Rolls or spools, Clamps, and the subclasses thereunder.

127. SKEIN-HOLDERS. Devices for holding skeins. Usually a plurality of rolls or bobbins or equivalent devices that hold the skein in longitudinally extended or skein form.

Search Class—

- 206—SPECIAL RECEPTACLES AND PACKAGES, subclasses 51, Packages, Ribbons, braids, and trimmings, and 64, Packages, Thread, for commercial packages.

128. UNWINDING DEVICES. Devices having revoluble guides or fliers rotated by pulling on the thread, cord, rope, etc., thereby unwinding it from the spool, bobbin, or reel, which is usually stationary or non-revoluble.

Search Class—

- 242—WINDING AND REELING, subclass 82, Reeling and unreeling, Reels, Metal-working, Revoluble coiler, for details or similar structures employed in winding.

129. COIL-HOLDERS. Devices or forms other than reels, bobbins, spool structures, or twine-holders for holding a coil upon which the material may be wound or from which it may be unwound.

Search Class—

- 242—WINDING AND REELING, subclass 82, Reeling, Reels, Metal-working, Revoluble coiler.

130. BOBBIN SUPPORTERS AND HOLDERS. Miscellaneous devices for holding bobbins and spools, usually elements of or attachments for machines, but excluding those particularly adapted to sewing-machines.

Search Classes—

- 242—WINDING AND REELING, subclasses 18, Bobbin and cop winding; 20, Bobbin and cop winding, Sewing-machine shuttles; 68, Reeling and unreeling, Fabrics, Cores and holders; 70, Reeling and unreeling, Fabrics, Cores and holders, Ribbon and film spools; 71, Reeling and unreeling, Fabrics, Cores and holders, Ribbon and film spools, Camera, and 106, Reeling and unreeling, Reels, Bracket-supported.

- 112—SEWING-MACHINES, subclass 23, Shuttles and bobbins, for shuttle-bobbin holders.

131. BOBBIN SUPPORTERS AND HOLDERS, CREELS. Devices for holding a plurality of bobbin structures in suitable arrangement or position to enable the threads to be drawn off without interference.

132. BOBBIN SUPPORTERS AND HOLDERS, RECEPTACLE OR TROUGH. Holders for bobbins forming troughs, cradles, or similar receptacles affording a protection to the bobbin and thread.

Search Classes—

- 112—SEWING-MACHINES, subclasses 15, Revolving-hook machines; 23, Shuttles and bobbins, and 32, Revolving hooks, for spool and bobbin holders specific to sewing-machines.

- 139—WEAVING, subclass 44, Shuttles, Cop-cell and cover.

133. TAKE-UPS. Includes devices for taking up slack during the winding operation, the devices usually being arranged between the winding reel and some other mechanism or machine.

Search Classes—

- 242—WINDING AND REELING, subclass 143, Twine-holders, Take-ups.

- 28—CORDAGE, subclass 24, Braiding carriers.

- 56—HARVESTERS, subclass 86, Self-binders, Tension and take-up devices.

134. SPOOL-HOLDERS. Devices not otherwise classifiable for holding bobbins or spools and adapted for general use, particularly domestic, or in connection with apparel apparatus and excluding such as are more particularly adapted for use with machines for making textiles or for spinning.

Search Classes—

- 242—WINDING AND REELING, subclass 130, Bobbin supporters and holders, for bobbin-holders specially adapted for use in textile machines.

- 223—APPAREL APPARATUS, subclass 56, Combined spool and implement holders, for spool-holders combined with other sewing-implement holders.

135. SPOOL-HOLDERS, THREAD-CUTTERS. Spool-holders provided with thread-cutters.

Search Class—

- 30—CUTLERY, subclass 14, Twine-cutters, for thread-cutters *per se* adapted to be driven into, attached to, or removably supported by the spool, many of which are also holders for the end of the thread.

136. SPOOL-HOLDERS, CARRIER ATTACHMENTS. Spool-holders provided with clamps, hooks, pins, or other devices by which they may be attached to the person or other support.

CLASS 242—Continued.

Search Class—

223—APPAREL APPARATUS, subclass 56, Combined spool and implement holders, for holders for a plurality of sewing implements provided with carrier attachments.

137. SPOOL-HOLDERS, RECEPTACLES. Spool-holders comprising a box or other form of receptacle specially adapted to receive spools to permit unwinding the thread.

Search Classes—

211—STORE FURNITURE, subclass 10, Cabinets, Spool.

223—APPAREL APPARATUS, subclasses 53, Work-boxes; 56, Combined spool and implement holders, and 57, Combined spool and implement holders, Stands.

138. SPOOL-HOLDERS, RECEPTACLES, SINGLE SPOOL. Receptacles for holding a single spool.

Search Classes—

112—SEWING-MACHINES, subclass 23, Shuttles and bobbins.

206—SPECIAL RECEPTACLES AND PACKAGES, subclass 52, Packages, Ribbons, braids, and trimmings, Rolls or spools, Inclosed, for mercantile units.

206—SPECIAL RECEPTACLES AND PACKAGES, subclass 63.3, Packages, Surgical supplies, Ligatures, for antiseptic ligature and thread spool holders.

139. SPOOL-HOLDERS, STANDS. Spool-holders comprising a base, pedestal, or equivalent provided with pins, spindles, or other devices for supporting spools.

Search Classes—

242—WINDING AND REELING, subclass 85, Reeling and unreeling, Carriers, for reel stands.

223—APPAREL APPARATUS, subclass 57, Combined spool and implement holders, Stands, for spool and implement stands.

140. SPOOL-HOLDERS, THREAD GUARDS AND GUIDES. Devices with or without thread guides, such as caps or disks, for preventing the thread from running above or below the heads or ends of the spool, thereby avoiding the winding of the thread around the spool spindle or its entanglement therewith. Includes guides particularly adapted to spool or twine holders.

Search Class—

242—WINDING AND REELING, subclass 157, Guides, for guides *per se*.

141. TWINE-HOLDERS. Miscellaneous devices not otherwise classifiable for holding a ball or mass of twine or cordage material to facilitate unwinding, prevent snarling, and present the twine end in position for handling.

Search Class—

211—STORE FURNITURE, subclass 1, Bag and twine holders, for combinations of bag and twine holders, including many types of boxes, cups, and cages for twine.

142. TWINE-HOLDERS, CUTTERS. Twine-holders having devices for cutting the twine.

Search Classes—

242—WINDING AND REELING, subclass 135, Spool-holders, Thread-cutters, and the notes thereunder.

30—CUTLERY, subclass 14, Twine-cutters, for cutting devices *per se*.

143. TWINE-HOLDERS, TAKE-UPS. Twine-holders for taking up or rewinding the twine after the lengths have been broken or cut off, so as to present the twine end in about the same position for unwinding or for use.

Search Class—

242—WINDING AND REELING, subclass 133, Take-ups, for take-ups adapted for winding machines.

144. TWINE-HOLDERS, TAKE-UPS, PIVOTED GUIDE. Take-up devices having a swinging or oscillatory twine guide which swings to one position in pulling out twine and returns to normal position on release, thereby taking up or shortening the length of the exposed end of twine.

145. TWINE-HOLDERS, TAKE-UPS, ROTARY. Take-ups having rotary means of some sort for taking up the slack or shortening the lengths of the exposed end of twine and usually operated by means of a spring, weight, or other motor, thereby rewinding the twine ball, reel, or bobbin.

146. TWINE-HOLDERS, RECEPTACLE. Twine-holders comprising a casing, box, cage, or other type of receptacle to confine the twine ball or within which the ball is rotatably or loosely mounted or held.

147. TENSION DEVICES. Miscellaneous tension devices for winding apparatus not otherwise classifiable and miscellaneous tension devices of general application to cordage material.

Search Classes—

242—WINDING AND REELING, subclasses 45, Bobbin and cop winding, Tension devices; 75, Reeling and unreeling, Fabrics, Tension devices; 99, Reeling and unreeling, Reels, Carriers, Brakes, and 128, Unwinding devices.

28—CORDAGE, subclass 24, Braiding carriers.

43—FISHING AND TRAPPING, subclass 15, Fishing, Reels.

56—HARVESTERS, subclass 86, Self-binders, Tension and take-up devices.

66—KNITTING AND NETTING, subclass 9, Take-ups and tensions.

111—SEEDERS AND PLANTERS, subclass 42, Check-row, Anchors.

112—SEWING-MACHINES, subclass 39, Tensions.

CLASS 242—Continued.

118—SPINNING, subclass 16, Yarn-controllers.

139—WEAVING, subclass 46, Shuttles, Guides and tensions.

140—WIRE-WORKING, subclass 133, Tension devices, and subclasses thereunder.

148. TENSION DEVICES, ALARMS AND INDICATORS. Alarm or indicator mechanism combined with or specially adapted for use with tension devices.

149. TENSION DEVICES, CLAMP. Tension devices in which a member thereof is held in frictional engagement with the cordage material employed, as thread, to regulate the tension of the same. Generally two cooperating members are provided, between which the material to be tensioned is passed.

Search Class—

140—WIRE-WORKING, subclass 135, Tension devices, Friction-clamp, for wire-tension clamps.

150. TENSION DEVICES, CLAMP, DISK TYPE. Tension clamps comprising a pair of rotary disks between which the material passes.

151. TENSION DEVICES, CLAMP, ROLLER. Includes friction-clamps in which one or both clamp members are provided with a rotary roller to engage and tension the material.

Search Class—

140—WIRE-WORKING, subclass 136, Tension devices, Friction-roller, for wire tensions.

152. TENSION DEVICES, CLAMP, ROLLER, FLUTED. Roller clamps having a roller provided with surface corrugations or flutes parallel with the axis of the roller. These flutes may form teeth to cooperate with those of a similarly formed roller, thus providing a tortuous course for the material.

153. TENSION DEVICES, TORTUOUS COURSE. Tension devices in which the material is forced to move over a deflected path, the extent of which produces the tension.

Search Classes—

242—WINDING AND REELING, subclasses 152, Tension devices, Clamp, Roller, Fluted, for fluted roller tension clamps producing a tortuous course, and 155, Tension devices, Wheel or pulley, for wheel tensions producing a tortuous course.

140—WIRE-WORKING, subclass 137, Tension devices, Tortuous course.

154. TENSION DEVICES, TORTUOUS COURSE, ADJUSTABLE. Tortuous-course tension devices in which the path of the material may be varied to change or adjust the tension.

155. TENSION DEVICES, WHEEL OR PULLEY. Tension devices in which a rotary pulley, wheel, or disk is employed and around which the cordage or other material is passed. The contact face or groove of the wheel may be provided with means for producing a sinuous or deflected path for the material.

156. TENSION DEVICES, BRAKES. Tension devices comprising friction brakes, shoes, springs, or adjustable bearing devices for regulating the rotation of the reel or bobbin, etc.

Search Classes—

242—WINDING AND REELING, subclass 132, Bobbin supporters and holders, Receptacle or trough, for tension-brake devices in combination with bobbin supporters.

28—CORDAGE, subclass 24, Braiding carriers.

43—FISHING AND TRAPPING, subclass 15, Fishing, Reels.

56—HARVESTERS, subclass 86, Self-binders, Tension and take-up devices.

57—HOISTING, subclass 116, Raising and lowering, automatic check and release.

74—MACHINE ELEMENTS, subclass 13, Machine-brakes, and the subclasses thereunder.

101—PRINTING, subclass 97, Paper-damping machines, Winders.

156—CURTAINS, SHADES, AND SCREENS, subclass 34, Shade, Rollers, Friction-brakes.

227—FIRE-ESCAPES, subclasses 23, Reel, End-brake, and 24, Reel, Peripheral-brake.

157. GUIDES. Devices not otherwise classifiable for directing the material to be wound to the reel drum or bobbin or miscellaneous guides for winding machines, excepting guides and guards for fabrics or webs and spool-holders.

Search Classes—

242—WINDING AND REELING, subclasses 76, Reeling and unreeling, Fabrics, Guards and guides, for web and fabric guards and guides, and 140, Spool-holders, Thread guards and guides, for guides employed with spool-holders.

28—CORDAGE, subclass 20, Yarn guides and clearers.

118—SPINNING, subclass 16, Yarn-controllers, for yarn and thread guides, protectors, or separators.

158. GUIDES, TRAVERSE MECHANISM. Includes devices for effecting relative traverse of the guide and core upon which the material is wound.

Note.—Guides of this type employed in winding bobbins and spools are classified with the particular type of bobbin-winding machine.

Search Classes—

43—FISHING AND TRAPPING, subclass 15, Fishing, Reels.

51—GRINDING AND POLISHING, subclass 2, Metal, Card-grinding.

Class 242—Continued.

159. **SPECIAL PACKAGES.** Miscellaneous balls and cylindrical masses of cordage material, such as thread, yarn, twine, and wire.

Search Class—

206—**SPECIAL RECEPTACLES AND PACKAGES**, subclass 59, Packages, Rolls and reels, for special packages of material other than cordage or wire.

160. **SPECIAL PACKAGES, CONE WIND.** Packages or cops of thread, yarn, etc., with or without a core, in which the material is wound in conical layers progressing from the base to the top of the cop or core.

Class 242—Continued.

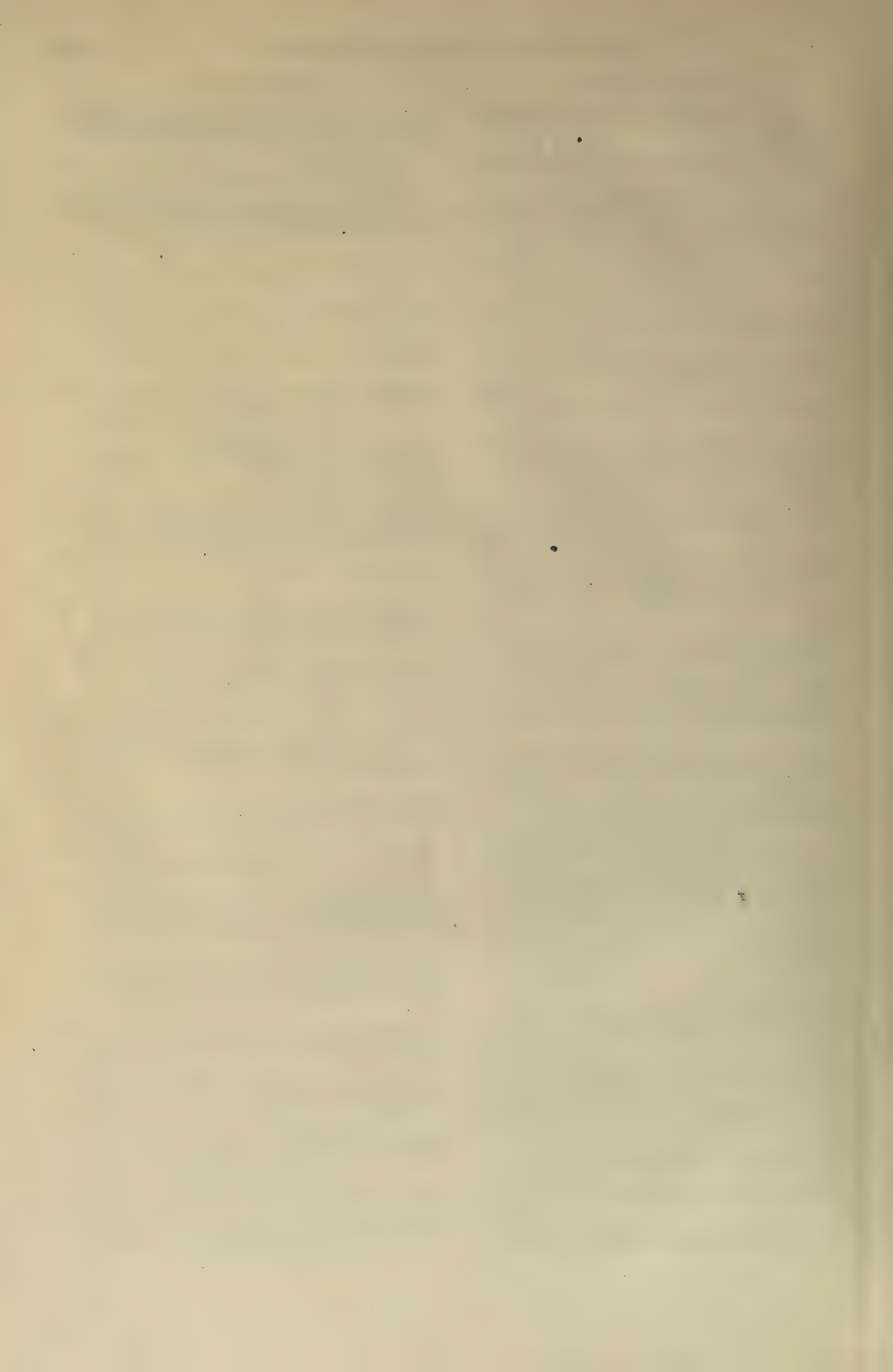
161. **SPECIAL PACKAGES, BOBBINS, COPS, AND SPOOLS.** Packages in which the bobbin, cop tube, spool, or other core is combined with cordage material or wire wound thereon.

Search Classes—

118—**SPINNING**, subclass 1, Bobbin and cop builders, for bunching yarn on cops.

139—**WEAVING**, subclass 89, Shuttles, Spindles and tips, for filling carriers.

206—**SPECIAL RECEPTACLES AND PACKAGES**, subclass 71, Packages, Metallic leaf, for package rolls of metal leaf. See also subclass 59, Packages, Rolls and reels.



CLASS 243.—PNEUMATIC DESPATCH.

DEFINITIONS.

Class.

This class includes apparatus for the propulsion of carriers through tubes by means of a current of air flowing in the tube. The pressure of air in the tube in the rear of the carrier may be that of the atmosphere, as when the air is exhausted ahead of the carrier, or above that of the atmosphere, when the air is forced into the tube in the rear of the carrier.

All the pneumatic transportation systems in which loose material of any character, such as grain, ore, cement, cotton, and the like, and parcels of any kind, including letters or other mail matter, are propelled from place to place without the use of carriers or cars for moving the matter transported are expressly excluded from this class.

This class is further limited to apparatus in which when the carrier is placed within the sending terminal it is not again under direct manual control until it reaches a designated point of delivery.

The apparatus under consideration may operate within the limits of a building or may extend over several miles. The carriers used may vary from those weighing a few ounces, as in ordinary pneumatic store service, to those capable of carrying several hundred pounds.

This class is closely related, on the one hand, to class 104, RAILWAYS, subclass Pneumatic, and, on the other, to class 193, CONVEYERS, subclasses 10, Pneumatic, and 21, Pneumatic, Stackers.

Under the following classes and subclasses will be found various devices for conveying material through a pipe by air pressure:

Classes 13, BRAKES AND GINS, subclass 19, Gin-feeders, Pneumatic; 15, BRUSHING AND SCRUBBING, subclass 8, Carpet cleaners; 31, DAIRY, subclasses 73, Milking machines, suction, and 94, Milking machines, Catheter, Suction; 37, EXCAVATING, subclasses 44, Excavators, Hydraulic, Steam vacuum, and 45, Excavators, Hydraulic, Suction pipe mouthpieces; 51, GRINDING AND POLISHING, subclasses 11, Glass and stone, Plane surfaces, and 18, File cleaning and resharpening, Sand blast; 56, HARVESTERS, subclass 117, Cotton harvesters, Pneumatic; 83, MILLS, subclasses 47, Dust collectors, Reciprocating; 48, Dust collectors, Rotating, and 54, Ore and coal, Separators, dry; 105, RAILWAY ROLLING STOCK, subclass 263, Sanding devices, Fluid pressure; 130, THRESHING, subclass 29, Threshing machines, Dust conveyers; 148, LUBRICATION, subclass 55, Lubricators, Force feed, Fluid operated, Steam or air, and 230, AIR AND GAS PUMPS, subclass 26, Sand blowers.

Subclasses.

1. SYSTEMS. Combinations of transmission tubes, terminals, switches, and other necessary accessories for the despatching of carriers and is made up of patents not otherwise classifiable.
2. SYSTEMS, COMBINED PRESSURE AND EXHAUST. Systems in which the tubes are subjected to both pressure and exhaust. In some cases the same tube is subject to pressure or exhaust to accommodate traffic in opposite directions. In other cases the tubes are connected to the exhaust and pressure sides of the pump. In the latter case the tubes may be in open or in closed circuit.
3. SYSTEMS, PRESSURE. Here the carriers are subjected to pressure above atmospheric.
Search Classes—
247—ELECTRICITY, CONDUITS, subclass 23, Wire-drawing where are found devices for threading a wire in conduit by means of a pneumatically propelled piston or carrier.
72—MASONRY AND CONCRETE STRUCTURES, subclass 128, Implements.
137—WATER DISTRIBUTION, subclass 70, Mains and pipes, Cleaners.
4. SYSTEMS, EXHAUST. Systems wherein the tube is subject to exhaust and the carriers are propelled by air at atmospheric pressure.
5. SYSTEMS, TRUNK LINE AND BRANCHES. Systems of transportation in which lines branch off at intervals from a main transmitting tube, the switches to these branches being controlled from the central station.
6. SYSTEMS, RELAY. Systems or parts of systems in which the controlling feature is that the propelling force shall be renewed at intervals in order to compensate for loss by leakage or otherwise.
7. SYSTEMS, ACTIVE ON TRANSIT, MOTOR ACTUATING. Systems which are operated both by pressure and exhaust, but in which no current of air circulates except upon the introduction of a carrier, when a motor is set in operation, either manually or automatically, to furnish the necessary pressure. In some cases the motor operates continuously to avoid the necessity of stopping and starting; but at such times as the system is idle the pressure will be insufficient to propel a carrier.

Note.—The term "motor" includes all apparatus operating to produce pressure or exhaust.

CLASS 243—Continued.

8. SYSTEMS, ACTIVE ON TRANSIT, MOTOR ACTUATING, PRESSURE. Upon the introduction of a carrier the motive fluid is placed under a pressure greater than that of the atmosphere. In some instances when the system is idle a slight circulation of air may occur, but not sufficient to propel the carriers.
9. SYSTEMS, ACTIVE ON TRANSIT, MOTOR ACTUATING, EXHAUST. Apparatus in which when the system is idle no circulation of motive fluid takes place and from which upon the introduction of a carrier the motive fluid is partially exhausted to give the necessary propelling force. In some cases the exhaust occurs continuously, but at such times as the system is idle to an extent insufficient to propel a carrier. In some instances instead of the system becoming active upon the introduction of a carrier into the sending terminal such action occurs upon the removal of a carrier from a holder normally containing the carriers, the holder being connected in some way to the sending terminal.
10. SYSTEMS, ACTIVE ON TRANSIT, RESERVOIR. Here no fluid is moving in the transmission tube until it is connected to utilize an existing partial vacuum or supply of compressed fluid in a pipe or other reservoir.
11. SYSTEMS, ACTIVE ON TRANSIT, RESERVOIR, PRESSURE. Here the fluid in the transmission tube is quiescent until connected to a supply under pressure in a pipe or other reservoir.
12. SYSTEMS, ACTIVE ON TRANSIT, RESERVOIR, EXHAUST. Systems in which no fluid is moving in the transmission tube until connection is made with a pipe or other reservoir in which there exists a partial vacuum.
13. SYSTEMS, ACTIVE ON TRANSIT, RESERVOIR, TIMERS. Here the system is idle until the transmission tube is connected to a pipe or other reservoir to utilize a partial vacuum or a pressure supply. After a predetermined time the connecting valve is closed by a mechanism adapted to that purpose.
14. SYSTEMS, ACTIVE ON TRANSIT, RESERVOIR, TIMERS, PRESSURE. Systems in which no fluid is moving in the transmission tube until it is connected to an existing pressure supply. The time during which the pressure acts is limited by a mechanism adapted to that purpose.
Search Class—
243—PNEUMATIC DESPATCH, subclass 27, Terminals, Sending, Pressure Lock, Timers, for sending terminals of the nature here shown.
15. SYSTEMS, ACTIVE ON TRANSIT, RESERVOIR, TIMERS, EXHAUST. The normally idle transmission tube is connected for service to a pipe or other reservoir in which there is an existing partial vacuum. The time of application is limited by a mechanism adapted to that purpose.
16. SYSTEMS, SELECTIVE DELIVERY. Systems in which the transmission tube is supplied with a number of intermediate terminal points, at which are located switches for deflecting the carriers from the main tube. The point selected depends upon the configuration or size of the carrier.
17. SYSTEMS, SELECTIVE DELIVERY, PRESSURE. Systems furnished with a number of intermediate terminals supplied with deflecting switches, the switch selected depending upon the configuration or size of the carrier. The propelling fluid is under pressure greater than atmospheric.
18. SYSTEMS, SELECTIVE DELIVERY, EXHAUST. Systems in which the transmission tube has a number of intermediate delivery terminals supplied with deflecting switches, the switch selected by a carrier depending upon its size or configuration. The air is exhausted ahead of the carrier, the latter then being subject to atmospheric pressure.
19. TERMINALS, COMBINED DELIVERY AND SENDING. Terminal valve structures which both receive the carrier from the system to deliver to the attendant and receive it from the attendant to transmit through the system. Also includes structures of this character placed at intermediate points for receiving carriers from the system, forwarding and receiving from transmission through the system.
20. TERMINALS, DELIVERY, PRESSURE. Valve structures for receiving carriers from the transmission tube and delivering at the station, the carriers being transmitted by fluid pressure above atmospheric.
21. TERMINALS, DELIVERY, PRESSURE, DOUBLE GATE. Carriers propelled by fluid under pressure are received into a chamber for delivery at a station, the ends of the chamber being furnished with gates, one of which will always be closed.

Class 243—Continued.

Search Classes—

- 61—HYDRAULIC ENGINEERING, subclasses 3, Caissons, and 16, Tunnels, for air locks of analogous structure.
 114—SHIPS, subclass 68, Building, Insubmergible vessels.

22. TERMINALS, DELIVERY, PRESSURE, SINGLE GATE. Valve structures for receiving from the transmission tube carriers under fluid pressure and delivering at a station. The end of the transmission tube is closed by a single gate opened and closed by means brought into action by the movement of the carrier. The gate is unrestricted as to form.
23. TERMINALS, DELIVERY, EXHAUST. Terminal structures for receiving and delivering from the transmission tube carriers that are propelled by air at atmospheric pressure, the air being exhausted ahead of the carrier.
24. TERMINALS, DELIVERY, EXTERNAL RECEIVERS. Structures adapted to receive the carrier after its expulsion from the terminal.
25. TERMINALS, SENDING, PRESSURE. Valve structures into which the carrier is inserted for transmission through the system, the propelling air pressure being above atmospheric. Note.—Many of the terminals of this class are constructed with two gates.
- Search Classes—
 61—HYDRAULIC ENGINEERING, subclasses 3, Caissons, and 16, Tunnels, for analogous features in air locks.
 89—ORDNANCE, subclasses 5, Submarine; and 6, Pneumatic, for analogous mechanisms for introducing a charge into a pneumatically operated gun.
 114—SHIPS, subclass 238, Torpedo Launching.
 124—AIR GUNS, CATAPULTS, AND TARGETS, subclass 11, Guns, Air, Spring, Magazine.
26. TERMINALS, SENDING, PRESSURE, LOCK. Here after a carrier has been inserted into the pressure sending terminal the entrance gate is locked to prevent the insertion of another carrier until the first carrier has passed into the transmission tube and unlocked the entrance gate.
 Note.—Double gate sending terminals are common in this subclass.

Search Class—

- 61—HYDRAULIC ENGINEERING, subclasses 3, Caissons, and 16, Tunnels for analogous devices.

27. TERMINALS, SENDING, PRESSURE, LOCK, TIMERS. The entrance gate of the pressure sending terminal is locked after the insertion of a carrier to prevent the insertion of another carrier until upon the expiration of a predetermined interval of time the gate is released by a mechanism adapted to that purpose.

Class 243—Continued.

Search Class—

- 243—PNEUMATIC DESPATCH, subclass 14, Systems, Active on transit, Reservoir, Timers, Pressure, for other terminals of this character.
28. TERMINALS, SENDING, EXHAUST. Valve structures for receiving carriers to be sent through the transmission tube under atmospheric pressure, the air being exhausted ahead of the carrier.
29. SWITCHES. Devices not otherwise classifiable for diverting carriers from a transmission tube into a branching tube.
30. SWITCHES, MAIN AND BRANCH LINE BLOCK. Devices placed at the junction of two tubes adapted to the transmission of carriers, the mechanism being actuated by a carrier passing through the junction from one tube to prevent the passage of a second carrier from the other tube until the first carrier has cleared the junction.
31. SWITCHES, TUBE SECTION. Switches comprising tubular members of equal cross section with the transmission tube. The movable switch member either transmits the carrier to the branch line or is thrown to one side to permit the diversion of the carrier at the required point.
32. CARRIERS. Miscellaneous receptacles for cash, parcels, or other articles or material to be transmitted through tubes by means of fluid pressure.
33. CARRIERS, WHEELED. Receptacles for cash, parcels, or other articles or material to be transmitted through tubes by means of fluid pressure, the receptacles running on wheels or rollers of any form.
34. CARRIERS, SLIDING, SIDE OPENING. The carriers slide in the tube and the opening is in the side of the receptacle.
35. CARRIERS, SLIDING, END OPENING. The carriers slide in the tube and the opening is in the end.
36. SIGNALS AND INDICATORS. Apparatus for receiving or transmitting intelligence of the position of a carrier in the system, its condition, or the condition of the system. Also means on the carrier for indicating its destination, point of departure, contents, or other information relating to it.
37. OBSTACLE DETECTORS. Devices for facilitating the detection and removal of obstacles in a transmission tube. The obstacle may be a carrier.
38. DETAILS. Elementary parts of systems and their accessories not otherwise classifiable.
39. DETAILS, CARRIER. Elementary parts of or accessories to carriers.

CLASS 244.—AERONAUTICS.

DEFINITIONS.

Class.

Except as hereinafter noted this class contains and is limited to structures adapted for floating or being propelled in the air—as balloons, flying machines, parachutes, kites, etc.—and the necessary appliances for aiding and controlling such flight.

Subclasses.

1. MISCELLANEOUS. Aeronautical devices not otherwise classifiable.

2. LAUNCHING AND LANDING DEVICES. Apparatus for launching or projecting and devices for receiving flying machines of any form upon alighting. This subclass includes devices for projecting aerial toys—such as helicopters, parachutes, etc.—that are freely sustained for a time in the air.

Note.—For projectors used in operating tops or flying toys having figure or other toy features search should be made in class 46, GAMES AND TOYS.

Search Class—

124—AIR GUNS, CATAPULTS, AND TARGETS, subclasses 1, Catapults, and 12, Guns, Spring, for boomerang projectors.

3. BALLOONS. Structures well known as “free balloons.” Also balloons which without self-contained propelling means may be directed horizontally by movable planes or sails.

Search Classes—

244—AERONAUTICS, subclass 5, Balloons, Propelled, and the subclasses thereunder, for structural and other features of balloon sacks.

46—GAMES AND TOYS, subclass 37, Toys, for patents for toy balloons having figure or other toy features in addition.

4. BALLOONS, CAPTIVE. Balloons to be held captive by a rope in some cases fixed to the ground, in others attached to a movable anchor. In some cases the anchor is movable along a rail adapted to the purpose.

Search Classes—

40—CARD, PICTURE, AND SIGN EXHIBITING, subclass 127, Signs, Aesthetic.

104—RAILWAYS, subclass 154, Balloon.

5. BALLOONS, PROPELLED. Balloons and accompanying structures propelled and guided by self-contained apparatus, includes structures in which the buoyant power of the balloon is sufficient to overcome only a portion of the weight of the structure.

Note.—For machines heavier than air having propelling apparatus similar to that shown in this and the subclasses down to 10 see subclasses 11, Flying machines; 13, Flying machines, Aeroplane, Propelled, and the subclasses thereunder; 19, Flying machines, Helicopters; 20, Flying machines, Wing.

6. BALLOONS, PROPELLED, SCREW. Balloons driven by a screw.

Search Class—

244—AERONAUTICS, subclasses 10, Balloons, Propelled, Fluid, and 18, Flying machines, Aeroplane, Propelled, Fluid, for examples of screw propellers inclosed in a tube or other channel.

7. BALLOONS, PROPELLED, SCREW, HELICOPTER. Balloons whereof the predominant propelling means is a lifting screw or helicopter.

Search Class—

244—AERONAUTICS, subclasses 10, Balloons, Propelled, Fluid, and 18, Flying machines, Aeroplane, Propelled, Fluid, for examples of screw propulsion in which the screw is completely inclosed in a tube or other channel.

8. BALLOONS, PROPELLED, PADDLE-WHEEL. Propelled balloons in which the only or predominant propelling means is a paddle-wheel.

9. BALLOONS, PROPELLED, WING. Propulsion accomplished by means of beating wings.

10. BALLOONS, PROPELLED, FLUID. Propelled balloons driven by means of the reaction of a jet of air or other gas upon the surrounding air. This group includes devices for utilizing pneumatic jets actuated by paddle-wheels, screws, and centrifugal or other pumps located somewhere in an inclosed tube, channel, or way between the intake and the emerging orifice. Also devices for utilizing the propulsive force of the explosion of charges of gas, torpedoes, or other explosive matter. All jet propellers that involve steering means combined with the propelling means are also included.

Search Class—

115—MARINE PROPULSION, subclass 11, Jet, and the subclasses thereunder.

CLASS 244—Continued.

11. FLYING MACHINES. Miscellaneous structures without gas fields, adapted to fly freely above the earth and sustained by the reactive force of the air.

12. FLYING MACHINES, AEROPLANE. Structures adapted to fly freely above the earth, sustained by the reaction of the air on one or more planes.

Note.—The term “plane” as used in this and following definitions to indicate an element of a flying machine is taken to mean a material surface of any required form adapted to be sustained in flight by the reaction of the air.

Search Classes—

46—GAMES AND TOYS, subclass 37, Toys.

102—AMMUNITION AND EXPLOSIVE DEVICES, subclass 26, Projectiles.

124—AIR GUNS, CATAPULTS, AND TARGETS, subclasses 1, Catapults, and 12, Guns, Spring, for boomerangs and boomerang projectors.

13. FLYING MACHINES, AEROPLANE, PROPELLED. Structures flying freely above the earth, sustained by the reaction of the air on one or more planes, and carrying means for propulsion.

14. FLYING MACHINES, AEROPLANE, PROPELLED, SCREW. Flying machines driven by a screw propeller.

Search Classes—

244—AERONAUTICS, subclass 13, Flying machines, Aeroplane, Propelled, Fluid, for examples of screw propulsion in which the screw is entirely inclosed in a tube or other channel.

46—GAMES AND TOYS, subclass 37, Toys, for structures of this type accompanied by figure or other toy features.

15. FLYING MACHINES, AEROPLANE, PROPELLED, SCREW, HELICOPTER. Lifting screw propelled aeroplanes.

Search Class—

244—AERONAUTICS, subclass 13, Flying machines, Aeroplane, Propelled, Fluid, for examples of screw propulsion in which the screw is inclosed in a tube or other channel.

16. FLYING MACHINES, AEROPLANE, PROPELLED, PADDLE-WHEEL. Paddle-wheel propelled aeroplanes.

17. FLYING MACHINES, AEROPLANE, PROPELLED, WING. Beating wing propelled aeroplanes.

18. FLYING MACHINES, AEROPLANE, PROPELLED, FLUID. Flying machine structures propelled by means of the reaction of a jet of air or other gas upon the surrounding air. Also devices for utilizing pneumatic jets actuated by screws, paddle-wheels, and centrifugal or other pumps located somewhere in an inclosed tube, channel, or way between the intake and emerging orifice. Also devices for utilizing the propulsive force of explosions of charges of gas or of torpedoes or other explosive bodies. All jet propellers that involve steering means combined with the propelling means are here included.

Search Class—

115—MARINE PROPULSION, subclass 11, Jet, and the subclasses thereunder.

19. FLYING MACHINES, HELICOPTERS. Flying machines in which the lifting power is developed solely by one or more screw propellers with vertical or approximately vertical axes. In some cases propellers for driving in a horizontal direction are shown.

Note.—For toy structures of this type having figure or other toy features search in class 46, GAMES AND TOYS, subclass 14, Buzzes and Whirligigs.

20. FLYING MACHINES, WING. Flying machines in which the means of sustentation and propulsion consists of beating wings.

21. PARACHUTES. Structures indicated by the title, as well as other forms of planes which when descending oppose greater resistance to the air.

Search Classes—

46—GAMES AND TOYS, subclass 37, Toys, for toy parachutes connected with figure or other toy features.

95—PHOTOGRAPHY, subclass 86, Camera supports.

102—AMMUNITION AND EXPLOSIVE DEVICES, subclasses 20, Pyrotechnics, and 23, Pyrotechnics, Rockets, for examples of the use of parachutes in connection with pyrotechnics and projectiles.

22. KITES. Structures of the well known form indicated by the title—viz., light frames covered with paper or other fabric, adapted to be supported in the air by the wind when held by a string.

Note.—For use of kites to support cameras see class 95, PHOTOGRAPHY, subclass 86, Camera supports.

23. KITES, MULTIPLE PLANE. Kites with two or more lifting surfaces presented to the air currents.

CLASS 244—Continued.

24. **KITES, ACCESSORIES.** Devices not a part of the kite structure to be operated in connection with kites.

Search Class—

95—**PHOTOGRAPHY**, subclass 86, Camera supports.

25. **PROPELLERS.** Propellers *per se* not otherwise classifiable, as well as means and methods of driving, the arrangement, hanging connections or fitting, combinations with steering mechanism, and combinations by which the propellers may be used in steering.

Search Classes—

244—**AERONAUTICS**, subclasses 5, Balloons, Propelled, and the subclasses thereunder; 11, Flying machines, and 13, Flying machines, Aeroplane, Propelled, and the subclasses thereunder; 19, Flying machines, Helicopters, and 20, Flying machines, Wing, for examples of propellers shown in this and the following three subclasses.

115—**MARINE PROPULSION**, subclass 19, Buoyant propellers.

26. **PROPELLERS, SCREW.** Screw propellers applied to structures adapted to aerial navigation and involving their form and structure.

Search Classes—

244—**AERONAUTICS**, subclasses 5, Balloons, Propelled; 6, Balloons, Propelled, Screw; 12, Flying machines, Aeroplane; 13, Flying machines, Aeroplane, Propelled, and 17, Flying machines, Aeroplane, Propelled, Wing, for further examples of screw propellers.

CLASS 244—Continued.

115—**MARINE PROPULSION**, subclass 34, Screw propellers, and the subclasses thereunder.

27. **PROPELLERS, WING.** Wing propellers, Oscillating or rotary, applied to structures adapted to aerial navigation and involving their form and structure.

28. **PROPELLERS, PADDLE-WHEEL.** Paddle-wheel propellers applied to structures adapted to aerial navigation and involving their form and structure.

Search Classes—

244—**AERONAUTICS**, subclasses 7, Balloons, Propelled, Screw, Helicopter; 11, Flying machines, and 14, Flying machines, Aeroplane, Propelled, Screw, for further examples of paddle-wheels.

115—**MARINE PROPULSION**, subclass 49, Paddle-wheels, and the subclasses thereunder.

29. **STEERING MECHANISM.** Rudders or combinations of rudders with other planes by means of which aerial structures are directed.

30. **CARS.** Cars or cabins suspended from or carried by balloons or other structures adapted for aerial navigation and designed to contain human beings or material of any kind.

31. **DETAILS.** Elementary parts of structures or instruments used in aeronautics.

CLASS 245.—WIRE FABRICS AND STRUCTURE.

DEFINITIONS.

Class.

This class includes flexible all-wire or slat-and-wire fabric, wire blanks, panels and fabric structures not otherwise classifiable, and miscellaneous wire joints in which at least one of the intersecting or connected elements is bent, looped, twisted, or coiled about the other or is subjected to an analogous wire-working operation to form or make the fabric or wherein wire is made an essential element of the invention. Fabrics, joints, or other structures wherein the elements are joined or secured together, for example, by tie-wires or ties, without bending or twisting the elements, or by weaving, welding, casting, nailing, and stapling and wherein wire is not made an essential element of the invention are excluded.

Search Classes—

- 5—BEDS, subclass 39, Bed-bottoms, Fabric, and the subclasses thereunder, for structures specific thereto, as combinations with the frame, end springs, bottom springs, etc.
 - 15—BRUSHING AND SCRUBBING, subclass 64, Mats, Wire, for combinations of wire fabrics with frames, borders, or end strips, scrapers, etc.
 - 39—FENCES, subclass 72, Fences, Wire, Fabric, for structures specific to fences, as the combination with posts, stretchers, joints, or for ornamental fence fabrics.
 - 49—GLASS, subclasses 32, Molding, Wire-glass, and 92, Structure; also subclass 86, Processes, Molding, Wire-glass, for wire-glass and wire fabrics employed in glass-making.
 - 66—KNITTING AND NETTING, subclass 4, Fabrics, for methods of forming meshes and ties.
 - 72—MASONRY AND CONCRETE STRUCTURES, subclass 119, Reinforcing elements, Lathing, Wire, for wire fabrics specific to lathing.
 - 189—METALLIC BUILDING STRUCTURES, subclasses 34, Structural units, and 82, Grilles, Composite, for structural units and structural metal work.
 - 219—ELECTRIC HEATING AND RHEOSTATS, subclass 46, Heaters, Flexible.
- For composite fabrics comprising fabric or web structures in which a wire fabric is used for reinforcement or protection—

Search Classes—

- 2—APPAREL, subclass 76, Body-garments, Corset-stiffeners.
- 74—MACHINE ELEMENTS, subclasses 62, Belts, and 65, Belts, Metal-reinforced.
- 101—PRINTING, subclass 113, Printing-couple appliances, Blankets.
- 137—WATER DISTRIBUTION, subclass 90, Mains and pipes, Hose.
- 152—RESILIENT TIRES AND WHEELS, subclasses 3, Tires, Cushion, Armored; 17, Tires, Pneumatic, Armored, Externally, and 18, Tires, Pneumatic, Armored, Internally.
- 154—LAMINATED FABRIC AND ANALOGOUS MANUFACTURES, subclasses 52, Fabrics, Wear and strain resisting, and 53, Fabrics, Wire-reinforced.

Subclasses.

1. MISCELLANEOUS. Miscellaneous wire articles not otherwise classifiable, fabric blanks, panels, or other structural fabric forms adapted to be used in the manufacture of chairs, lounges, carriages, go-carts, napkin rings, or other articles, or to be united to similar blanks for any purpose.
 2. FABRICS. Miscellaneous wire fabrics not otherwise classifiable.
 3. FABRICS, TIES AND CLIPS. Wire fabrics having the elements secured together by bending, coiling, or twisting and in which tie-wires or clips are used for strengthening the joints of the intersecting wires.
- Search Class—**
- 39—FENCES, subclasses 72, Fences, Wire, Fabric, for fabrics in which the elements are united together by ties, and 108, Fences, Wire, Joints, for tie-wire joints.
4. FABRICS, CHAIN. Chain-type fabrics having elements or links substantially alike and interlinked with those adjacent.

CLASS 245—Continued.

Search Classes—

- 59—CHAIN, STAPLE, AND HORSESHOE MAKING, subclasses 80, Chains, Ornamental, and 83, Chains, Wire.
- 63—JEWELRY, subclass 4, Bracelets, Chain.
- 74—MACHINE ELEMENTS, subclass 64, Belts, Link.

5. FABRICS, INTERLOCKING LOOPS. Fabrics in which the longitudinal or cross wires are bent to form a series of loop elements, generally arranged in rows, which hook into, pass through, interlock, or otherwise engage and hold loops formed in an adjacent row or section.

Search Class—

- 66—KNITTING AND NETTING, subclass 4, Fabrics, for tying methods.

6. FABRICS, COIL. Fabrics comprising a plurality of connected helical coils, usually intercoiled together.

Search Classes—

- 5—BEDS, subclass 39, Bed-bottoms, Fabric, for coil fabrics specific to bed-bottoms.
- 15—BRUSHING AND SCRUBBING, subclass 64, Mats, Wire, for coil fabrics specific to mats.

7. FABRICS, HEXAGONAL MESH. Wire fabrics having substantially six-sided meshes.

8. FABRICS, QUADRANGULAR MESH. Wire fabrics having four-sided meshes.

Search Classes—

- 245—WIRE FABRICS AND STRUCTURE, subclass 9, Fabrics, Link, for link fabrics of quadrangular mesh.
- 5—BEDS, subclass 39, Bed-bottoms, Fabric.
- 39—FENCES, subclass 72, Fences, Wire, Fabric, for structures specific to fences.

9. FABRICS, LINK. Wire fabrics in which a plurality of similar elements are united by dissimilar elements or links or in which the cross wires are composed of sections suitably connected together or to the longitudinal wires or strands.

Search Class—

- 39—FENCES, subclass 72, Fences, Wire, Fabric.

10. FABRICS, EDGES AND SEAMS. Edge, selvage, or seam structures of wire fabrics.

11. FABRICS, SLAT-AND-WIRE. Miscellaneous fabrics not otherwise classifiable, comprising slats and wires secured together by the mere bending, coiling, or twisting of the wires about the slats.

Search Classes—

- 20—WOODEN BUILDINGS, subclasses 13, Lathing, and 78, Slatted floor covering.
- 39—FENCES, subclass 73, Fences, Wire, Picket.
- 217—WOODEN RECEPTACLES, subclass 44, Boxes, Crates, Knock-down, Cylindrical and bilge.

12. JOINTS. Wire joints formed by bending, coiling, or twisting processes. Includes joints in crossing wires formed by wrapping or twisting a loop formed in one wire about another, as the strand and stay wires of fences or warp or wool wires, or in coiling one about the other; also all joints not otherwise classifiable for connecting the ends of wires.

Search Classes—

- 24—BUCKLES, BUTTONS, CLASPS, ETC., subclass 27, Bale and package ties, Wire, and the subclasses thereunder.
- 39—FENCES, subclasses 79, Fences, Wire, Stays, Lock-plates; 108, Fences, Wire, Joints; 111, Fences, Wire, Stays, Tied, for joints involving a separate connecting member, tie, or tie-wire.
- 72—MASONRY AND CONCRETE STRUCTURES, subclass 114, Reinforcing elements, Joints.
- 173—ELECTRICITY, CONDUCTORS, subclass 263, Connectors, Wire-splices.
- 189—METALLIC BUILDING STRUCTURES, subclass 36, Structural units, Joints and connections.

RETURN TO **Government Documents Department**
TO **350 Main Library** **642-2568**

LOAN PERIOD 1	2	3
4	5	6

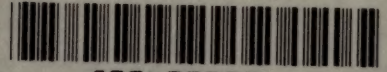
ALL BOOKS MAY BE RECALLED AFTER 7 DAYS

DUE AS STAMPED BELOW

JAN 23 1988		
RECD IN DOCS DEPT. JAN 20 1988 8V		
SENT ON ILL.		
JUL 15 1986		
U. C. BERKELEY		

UNIVERSITY OF CALIFORNIA, BERKELEY
FORM NO. DD7. 68m. 1/82 BERKELEY, CA 94720

U.C. BERKELEY LIBRARIES



C004792326

